Delaware and Hudson Canal Company

Waterpower on the Gravity Railroad

View of Carbondale from the Hill above Plane No. 28 Engine House. Photograph by Thomas H. Johnson. In this photograph, we see the Carbondale Canal, running north/south, in the area behind the Trinity Episcopal Church. Photograph in the collection of the Carbondale Historical Society and Museum.

By

S. Robert Powell, Ph.D.

October 9, 2015

Published by the Carbondale Historical Society and Museum, Inc.

Carbondale, PA 18407

ISBN 978-0-9903835-5-0

Published by the Carbondale Historical Society and Museum, Inc.
Carbondale, PA 18407 www.carbondalepahistorical.org
October 9, 2015, First Edition

144 pages, illustrated

A History of the

Delaware and Hudson Canal Company

in 24 Volumes

S. Robert Powell, Ph.D., 1974
Indiana University, Bloomington, IN

Acknowledgements

The newspaper collection in the archives of the Carbondale Historical Society and Museum and the Carbondale D&H Transportation Museum is an astonishing research resource. The collection covers the period from 1828 to 1980.

In 1983, S. Robert Powell and Donald W. Powell took it upon themselves to have microfilmed all of the nineteenth-century newspapers, then in the collection of the Carbondale Public Library. In the course of the following two years, the entire collection of nineteenth-century newspapers was microfilmed by Micrographics International, Inc., Hazleton, PA. Forty-three rolls of silver archival microfilm were produced, all funded by private donations.

Working copies of those forty-three rolls of microfilm were presented, in 1985, to the Carbondale Public Library. The 43 rolls of original silver archival microfilm were stored in a Carbondale bank vault from 1985 to February 16, 1990, when they were donated to The Historical Society of Pennsylvania (1300 Locust St, Philadelphia, PA 19107 Phone 215-732-6200), where, with any luck, they will be preserved forever.

On April 2, 1985, S. R. Powell initiated a second Carbondale newspaper microfilm project, this time working with Barbara Smith, Assistant Dean of the Pennsylvania State University Libraries, to have microfilmed, as part of the "Pennsylvania Newspaper Project," all of the Carbondale newspapers from 1899 to 1980, now in the collection of the Carbondale Historical Society and Museum and the Carbondale D&H Transportation Museum.

Working with Carbondale Historical Society members Henry J. Loftus and Donald W. Powell, and with David R. Hoffman, Library Services Director of the State Library of Pennsylvania, and with William A. Hamill, Rebecca Wilson, and Suzanne Kellerman, staff members of the Pennsylvania Newspaper Project, the Carbondale Historical Society orchestrated the microfilming, by Micrographics International, Inc., in the period 1985-1988, of 90 volumes of Carbondale newspapers, covering the period 1900-1980. The original microfilms of those 90 volumes are in the holdings of the State Library of Pennsylvania (Bureau of State Library, Forum Building, 607 South Drive, Harrisburg, PA 17120-0600 Phone 717-783-5950), where, with any luck, they will be preserved forever. Kodak #1220367 vesicular positive copies of those microfilms are in the microfilm reading room at the Carbondale Public Library. This enormous microfilming project was funded by a grant from the National Endowment for the Humanities and the Pew Memorial Trust.

Were it not for the newspapers in the archives of the Carbondale Historical Society and Museum and the Carbondale D&H Transportation Museum, an astonishing research resource by anyone's reckoning, this 24-volume history of the Delaware and Hudson Canal Company would not exist.

S. Robert Powell
November 28, 2014

Overview

The industrial revolution in America was born on October 9, 1829, in Carbondale, PA, when the first cut of Delaware & Hudson Gravity Railroad coal cars, loaded with mass produced anthracite coal, headed up Plane No. 1 out of Carbondale for Honesdale and to market in New York City.

Those cars, filled with anthracite coal from mines in Carbondale, traveled over 16 miles of railroad tracks, made up of eight inclined planes and three levels, to Honesdale, where the coal was transferred into canal boats and hauled 108 miles, through the D&H Canal, to the Hudson River.

Most of the coal that was sent through the D&H system in the course of the nineteenth century was shipped south on the Hudson River to the New York metropolitan market and to many ports on the Atlantic seaboard, north and south of New York. A large quantity of anthracite coal was also shipped up the Hudson River to Albany, and shipped through the Erie Canal to the American Midwest.

The mining, manufacturing, and transportation system that became operational on that day between the anthracite mines of the Lackawanna Valley and the retail markets for that coal on the eastern seaboard and in the American Midwest was the product of enlightened entrepreneurial, technological, and managerial thought on the part of the officers, managers, directors, and employees of the Delaware and Hudson Canal Company. That system, the first private sector million-dollar enterprise in American history, was, at the same time, the pioneer expression on this continent of mass production, a mode of production that would thereafter characterize industry in America and around the world.

Mass production, the revolutionary engine that made it possible for the D&H to launch its mining, manufacturing, and transportation system in Carbondale on October 9, 1829, and to perpetuate that system well into the 20th century, came into existence when it did and lasted for as long as it did because a body of employees

and managers, within the context of a community, of which both groups were a part, chose to work together for their mutual benefit and enrichment, to mass produce and market a commodity, and in so doing to implement the clearly articulated production and marketing objectives of "the company," the Delaware and Hudson Canal Company.

In this 24-volume work on the D&H,* we will (1) document the history of that mining, manufacturing, and transportation system, with a special focus on the rail lines of the Delaware and Hudson Canal Company in northeastern Pennsylvania, from the opening of the D&H Gravity Railroad in 1829 to the anthracite coal strike of 1902; and (2) demonstrate that the history of that mining, manufacturing, and transportation system, the D. & H. C. Co., from 1829 to 1902, is, at the same time, not only an illustration of eight decades of fine tuning by the D&H of their mass production procedures and techniques but also a full-bodied expression and record, both from the point of view of the D&H and from the point of view of its employees, of the birth, development, and first maturity of the industrial revolution in America.

This is a success story, directed by America's pioneer urban capitalists, and implemented by them and the tens of thousands of men, women, and children who emigrated from Europe to the coal fields of northeastern Pennsylvania in the nineteenth century to work for and with the D&H and to start their lives over again. This is a success story that is important not only within in the context of local, state, and regional history but also within the context of American history. It is a compelling story.

---

*The present volume focuses on the use of waterpower on the Gravity Railroad. Each of these 24 volumes will focus on one aspect of the history of the Delaware and Hudson railroad, from the opening of the Gravity Railroad in 1829 to the anthracite coal strike of 1902. Each volume will be an autonomous entity and published separately.

Table of Contents

6012 Waterwheels on Plane No. 28

6013 Waterwheel on Plane No. 21

6014 Philip Hone's Speech on the Occasion of the Groundbreaking for the D&H Canal

6015 Thomas Dickson: World Traveler, Lecturer, Trip of Scotland, Death

6016 Thomas Dickson the Manager of Men

6017 The D & H Gravity Railroad and Canal: Selected Bibliography

6001

Waterpower on the Gravity Railroad

In the volumes in this series on the 1845 configuration and the 1859 configuration of the Delaware and Hudson Gravity Railroad, Volumes II and III, respectively, we embarked on a preliminary investigation into the use of waterpower on the Delaware and Hudson Canal Company's Gravity Railroad. We will continue that investigation here.

Water power was used on the inclined planes of the D&H in three areas:

1. The light track from Honesdale to Waymart (Planes Nos. 13-17)

2. Planes Nos. 1 and 28 in Carbondale

3. Plane No. 21 in Archbald

In the present volume, we will focus in detail on the use of water power in those three areas.

6002

Light track Honesdale to Waymart: Planes Nos. 13-17

When the five inclined planes on the light track from Honesdale to Waymart were opened in 1843, four of them had stationary steam engines at the heads of the planes and one of them had a water wheel at the foot of the plane:

1843: the four planes with steam engines were Nos. 13, 15, 16, 17. The plane with a waterwheel was Plane No. 14.

James Archbald's original plan was to have the engines on all five of these planes powered by water wheels, but water rights were either too expensive (Plane No. 13) or could not be obtained (Nos. 15, 16, 17).

1846: water wheel installed on Plane No. 17, which means that three had steam (Nos.13, 15, and 16) and 2 had water (Nos. 14 and 17)

1847: one more plane was converted to water power (No. 15 or No 16): now three by water and two by steam

1848: one more plane was converted to water power (No. 15 or No. 16): now four by water and one (No. 13) by steam

1868: the water wheel on No. 14 was replaced with a stationary steam engine: now all five had stationary steam engines

The 1895 Gravity Railroad map volume shows the water wheels on Planes Nos. 14, 15, 16, and 17, as well as the stationary steam engines by which they were replaced (no water wheels after 1868 on the D&H). But it is important to keep in mind as one looks at the 1895 Gravity Railroad map volume that the water wheels shown on these four planes (14-17) were preceded by stationary steam engines, which are not shown on the maps. The stationary steam engines shown on the maps are the ones that were installed after the water wheels were removed.

The source for our knowledge about the motive power on the planes on the light track from Honesdale to Waymart in the early years of those planes is the February 1847 letter of James Archbald to D&H President John Wurts:

In his letter of February 1847 to President John Wurts, James Archbald said:

"On account of the hilly nature of the country [between Honesdale and Waymart], five engines were required for the ten miles, four of which were originally steam engines, and one a water-wheel. In making locations for these engines, we kept in view the economy of water in comparison with steam-power for this kind of work, and were so fortunate as to find situations for all of them, (except the one at Honesdale), where water could be used whenever the owners of it would sell at prices which it might be expedient for the company to pay. Last year [1846] we accordingly made a purchase which gave us the control of water for one of these engines, No. 5 [No. 17], and changed it for a water-wheel. This year [1847] we have been able to purchase land, giving the control of water the other two engines, one of which we shall change this winter, and the other the winter following, when four of the five engines will use water to do their work."

In *Century of Progress*, the new light track from Honesdale to Waymart is described as follows:

"For returning the empty cars, from Honesdale to No. 7, he [James Archbald] constructed a new track upon a different location, and on this employed stationary engines to draw up the cars to elevations from which they would move by gravity to the point at which they could be moved by the next engine in the series. On account of the rugged country, five of these stationary engines were installed to operate the ten miles of new track. At first, four of these engines were driven by steam and one by water. By 1847, however, two of them were operated by water power [water-powered hoisting engines], which was found to be cheaper. During 1847, Mr. Archbald intended to change one of the remaining three to water power, and he planned to change another to water power early in 1848." *COP*, pp. 135-36.

When were these waterwheels removed on these planes between Honesdale and Waymart?

Dr. Steers (p. 163) says it was in 1863.

“Water wheels on the Delaware and Hudson Canal Co. railroad with one exception were known as Rose* wheels. They were 20’ in diameter by 20’ wide and undershot in function. The wheel at No. 17 [originally called No. 5] differed only in that it was 30’ in diameter. All the water wheels were replaced by steam power in 1863.” (“The Delaware & Hudson Canal Company’s Gravity Railroad,” *Proceedings of the Canal History and Technology Symposium,* Volume II, March 26, 1983, pp. 129-203).

> *Timothy Rose of Cortlandville, NY patented a water wheel (Patent No. 7,674) on September 24, 1850. One wonders what Dr. Steers' source is for his assertion about Rose wheels on the D&H? Dr. Steers is incorrect when he says there was only one waterwheel at Plane No. 17. On the map on page 61 in this volume, two waterwheels are shown on Plane No. 17: Upper Water Wheel and Lower Water Wheel. The large water wheels that Dr. Steers affirms were on Planes 14, 15, and 16 were 20 feet wide and 20 feet in diameter; the wheel on Plane No. 17, says he, was 30 feet in diameter. Was sufficient water to power such huge wheels available between Waymart and Honesdale?

Charles A. Whiting in the *Cassier* article ("An American Gravity Railroad," *Cassier's Magazine,* Volume 8. No. 2, 1895) says that steam was substituted for water power at the planes with water wheels "about 1856":

“. . . in 1856 the present planes and ‘levels,’ from the foot of No. 1 to the head of No. 10, were commenced. This arrangement employed eight planes up the mountain from Carbondale to the summit, and all of the planes were renumbered as they are at present. / About this time, too, steam was substituted for water power at the planes using water wheels. . .”

Dr. Steers and Whiting are both incorrect on this point. The end point for water wheels on all Gravity planes was 1868. This we know from an article that was published in the *Carbondale Advance* on February 8, 1868:

“The Del. & Hud. Canal Co. have just put a stationary steam engine in at Plane No. 14, on their railroad, in place of the old water power. The engine was built at the Dickson Works, Scranton, and has been placed in charge of Silas Hoyle as Head Engineer and Walter Bryant, Assistant. The company now work the cars on all their planes by steam power.*—Herald” (Carbondale Advance,* Saturday, February 8, 1868, p. 3.)

6003

Kinds of Waterwheels

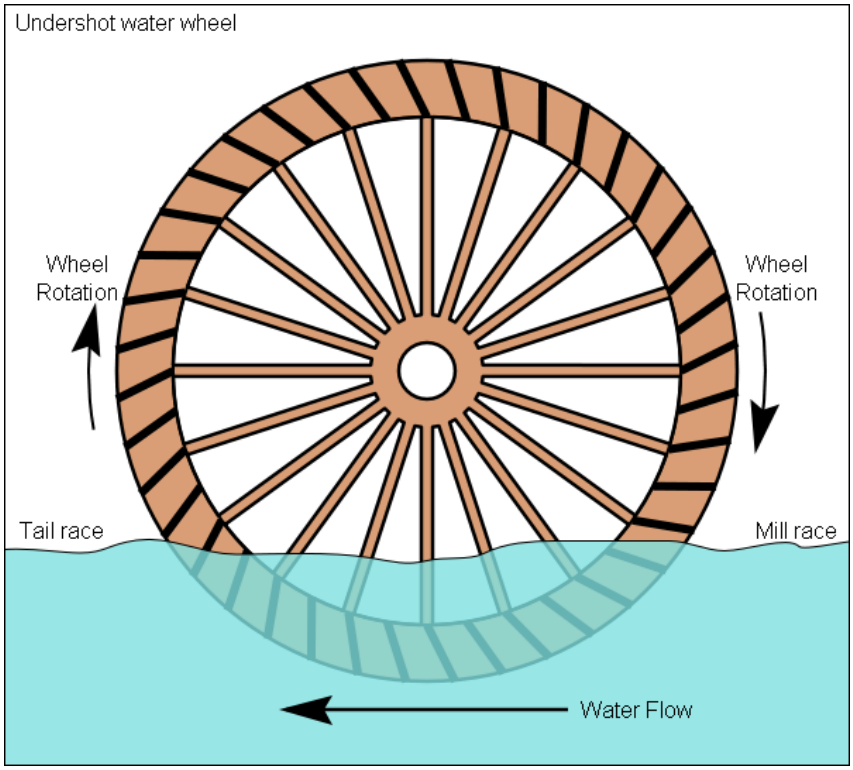
From *Wikipedia:*

Headrace, Tailrace:

A mill pond is formed when a flowing stream is dammed to feed a water wheel. A channel for the water flowing to or from a water wheel is called a *mill race* (also spelled millrace) or simply a *race* (in Scotland it is normally referred to as a *lade),* and is customarily divided into sections. The race bringing water from the mill pond to the water wheel is a *headrace;* the one carrying water after it has left the wheel is commonly referred to as a *tailrace.*

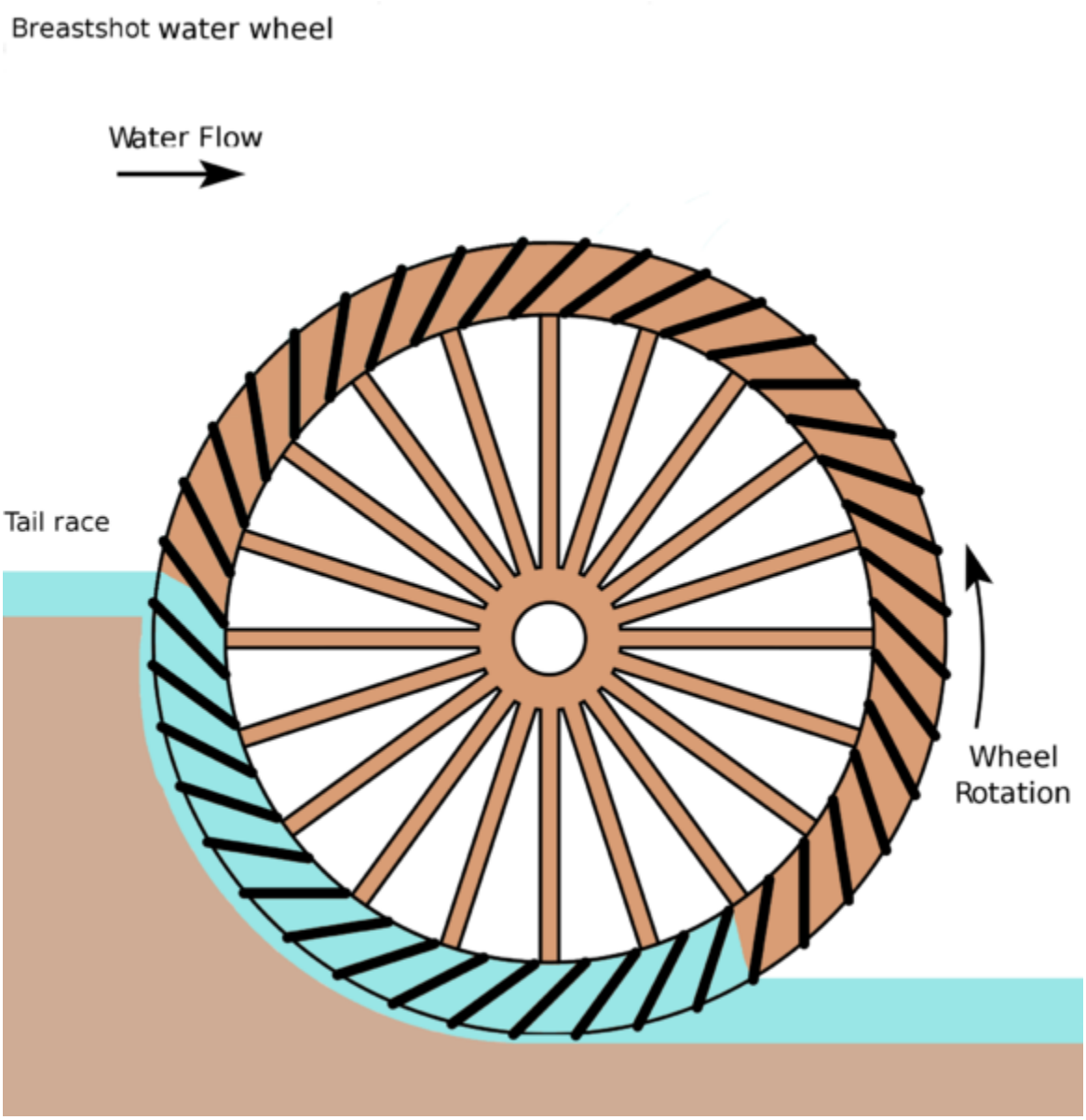
Undershot Wheel:

An undershot wheel (also called a *stream wheel)* is a vertically mounted water wheel that is rotated by water striking paddles or blades at the bottom of the wheel. The name undershot comes from this striking at the bottom of the wheel. This type of water wheel is the oldest type of wheel. Undershot wheels gain no advantage from head. <u>They are most suited to shallow streams in flat country</u> [emphasis added].



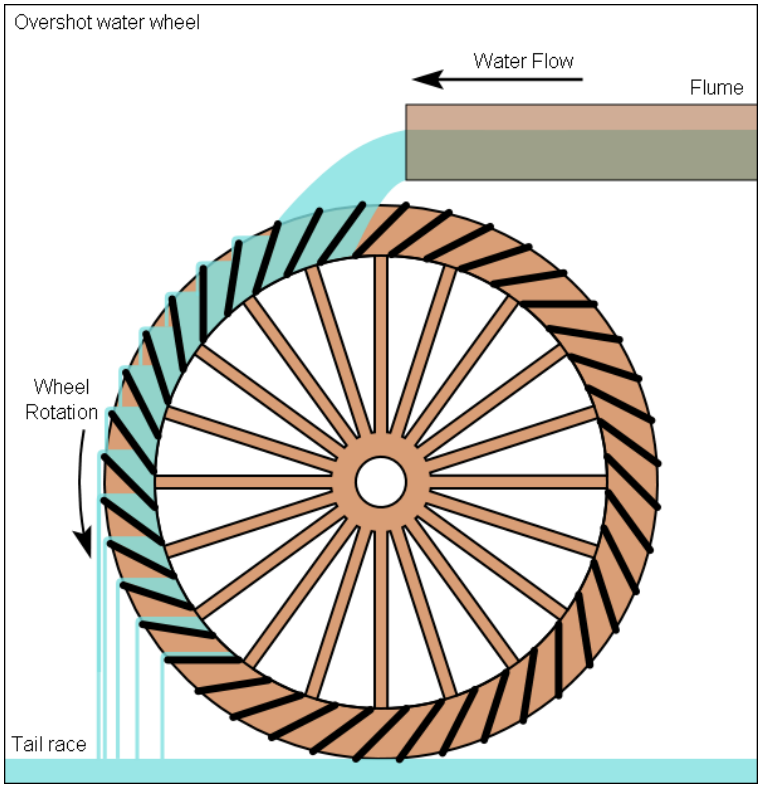
Breastshot wheel:

A vertically mounted water wheel that is rotated by falling water striking buckets near the center of the wheel's edge, or just above it, is said to be breastshot. Breastshot wheels are the most common type in the United States of America and are said to have powered the American industrial revolution. [Emphasis added] Breastshot wheels are less efficient than overshot wheels, more efficient than undershot wheels, and are not backshot.



Overshot Waterwheel:

A vertically mounted water wheel that is rotated by falling water striking paddles, blades or buckets near the top of the wheel is said to be overshot. In true overshot wheels the water passes over the top of the wheel, but the term is sometimes applied to backshot or pitchback wheels where the water goes down behind the water wheel. A typical overshot wheel has the water channeled to the wheel at the top and slightly beyond the axle. The water collects in the buckets on that side of the wheel, making it heavier than the other "empty" side. The weight turns the wheel, and the water flows out into the tail-water when the wheel rotates enough to invert the buckets. The overshot design can use all of the water flow for power (unless there is a leak) and does not require rapid flow. Unlike undershot wheels, overshot wheels gain a double advantage from gravity. Not only is the momentum of the flowing water partially transferred to the wheel, the weight of the water descending in the wheel's buckets also imparts additional energy. The mechanical power derived from an overshot wheel is determined by the wheel's physical size and the available head, so they are ideally suited to hilly or mountainous country. On average, the undershot wheel uses 22 percent of the energy in the flow of water, while an overshot wheel uses 63 percent, as calculated by English civil engineer John Smeaton in the 18th century. Overshot wheels demand exact engineering and significant head, which usually means significant investment in constructing a dam, millpond and waterways. Sometimes the final approach of the water to the wheel is along a lengthy flume or penstock.



The *McGraw Hill-Miners' Pocketbook* contains a very interesting discussion of water power in the section titled *Hydraulics.* Therein we read the following about four types of wheels—breast or undershot, overshot, impulse, and reaction—for using the power of waterfall. Here is the material on the two most commonly used types of wheels, undershot and overshot:

"Utilizing Power of Waterfall.—The power of a waterfall may be utilized by a number of different styles of motors, but each has certain advantages. / When the head is low (not over 5 or 6 ft.) *breast or undershot wheels* are frequently employed. If these are properly proportioned, it is possible to realize from 25% to 50% of the theoretical power of the fall, but the wheels are large and cumbersome compared with the duty they perform, and are not often installed at present [1916], especially near manufacturing centers. / For falls up to 40 or 50 ft., *overshot wheels* are very commonly employed, and they have been used for even greater heads than this. The overshot wheel derives its power both from the impulse of the water entering the buckets, and from the weight of the water as it descends on one side of the wheel in the buckets; the latter factor is by far the more important of the two. When properly proportioned, overshot wheels may realize from 70% to 90% of the power of the waterfall, but they are large and cumbersome compared with the power that they give, and are not often installed except in isolated regions, where they are made from timber by local mechanics." (p.332)

Given the fact that the waterwheels on Planes Nos. 14, 15, 16, and 17 were powered by shallow streams in essentially flat county, it is more than likely that they were undershot or breast-shot wheels. In person visits to the sites of these waterwheels on Planes Nos. 14, 15, 16, and 17 would perhaps provide a definitive answer to this question.

The *McGraw Hill-Miners' Pocketbook* also contains a very interesting discussion about the theoretical efficiency of water power. Therein, we read:

"**Theoretical Efficiency of Water-Power. –**The gross power of a fall of water is the product of the weight of water discharged in a unit of time, and the total head or difference in elevation of the surface of the water, above and below the fall. The term head, used in connection with waterwheels, is the difference in height between the surface of water in the penstock and that in the tailrace, when the wheel is running." (p. 331)

A mathematical formula for calculating the horsepower of a fall is then presented, followed by the following statement:

"The total power can never be utilized by any form of motor, because there is a loss of head, both at the entrance to, and exit from the wheel, and there are also losses of energy due to friction of the water in passing through the wheel. The ratio of the power developed by the wheel

to the gross power of the fall is the efficiency of the wheel. A head of water can be made use of in any one of the following ways: (1) By its weight, as in the water balance, or overshot wheel. (2) By its pressure, as in the hydraulic engine, hydraulic presses, cranes, etc., or in a turbine water wheel. (3) By its impulse, as in the undershot and impulse wheels, such as Peltons, etc. (4) By a combination of these."(p. 331)

This is followed by a mathematical formula for calculating the horsepower of a running stream.

When thinking about waterwheels on the *Gravity* Railroad, it is interesting to remember that waterwheels function only because *the force of gravity* acts upon water to make it pass through the waterwheel apparatus/structure. If the water doesn't *flow downhill*, the wheel won't work. If the level on a D&H Gravity plane doesn't *flow downhill*, Gravity cars will not move by themselves from the head of one plane to the foot of the next. Similarly, think about the *downhill flow* of water in a canal lock. The force of gravity was a silent partner of the D&H, a partner that was central to the successful operations of the Delaware and Hudson Canal Company from Carbondale to the Hudson River.

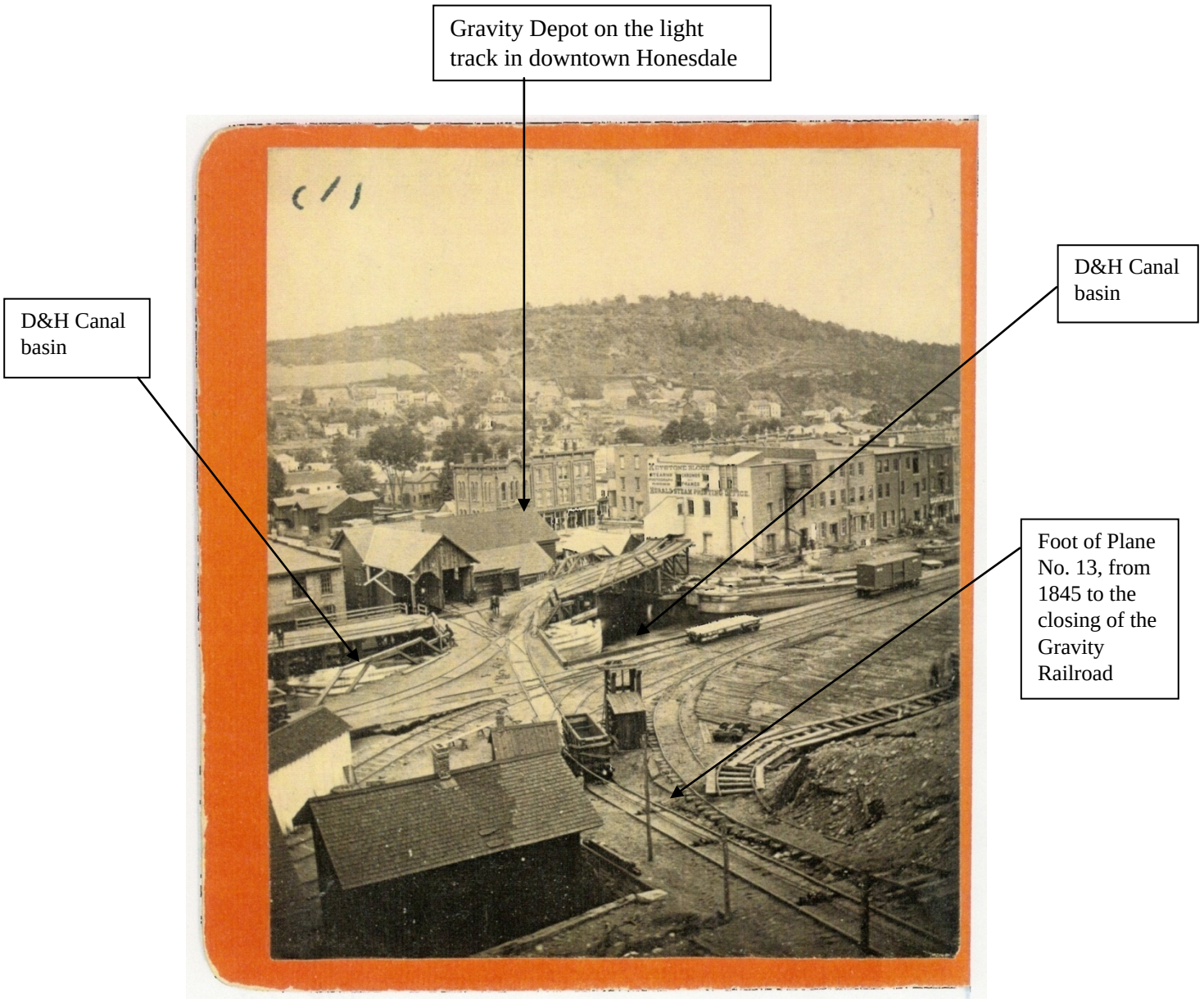
No contemporary photographs are known to exist of any portion of the 1845 configuration of the Gravity Railroad. Some extraordinary photographs, taken later in the nineteenth century, however, have come down to us. Maps do exist, thankfully, which show where the waterwheels on these planes were located and where the water came from to power these wheels.

We will now take a look at some photographs from the 1870s and some nineteenth-century maps to learn more about the light track planes between Honesdale and Waymart and about the waterwheels that at one time powered four of those planes.

Hensel stereocard No. 921: *Terminus of D. & H. RR., and D. & H. Canal.*

The new light track went up the hill, Plane No. 13, on the track shown in the lower right corner of this photograph.

It is interesting to remember that James Archbald, in his February 1847 letter to John Wurts, noted that a waterwheel could be installed on Plane No. 13 whenever the owners of the water that could be used to power such a wheel "would sell [to the D&H] at prices which it might be expedient for the company to pay."



6004

Plane No. 13

--steepest one on the Gravity Railroad; the plane rose 1 foot in 5

--985 feet long (rise 194.50 feet)

--powered by a stationary steam engine at the head of the plane

--Level 13: 14,238 feet long (fall 126.18 feet)

--there was never a waterwheel on Plane No. 13

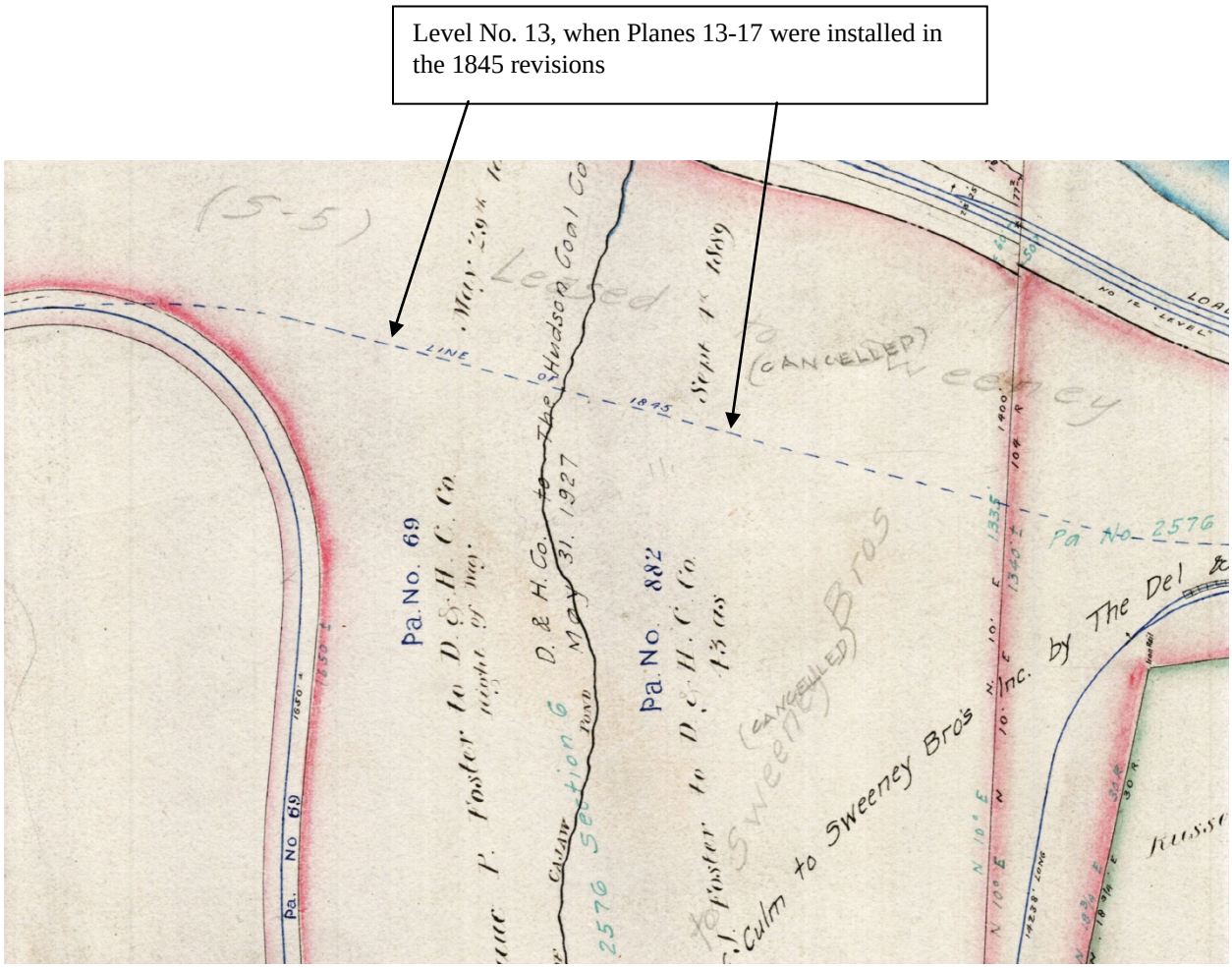
Original Level No. 13:

Plane No. 13, with its Level, were installed in the 1845 revisions to the roadbed. As originally configured, the level on Plane No. 13 (also known as No. 1 from the Honesdale perspective) had high trestling on it. This we know from *Torrey/Archbald,* from whom we learn that in 1848 that the high trestling on Level No. 13 was taken out.

"In 1848 there were indications that the high trestling on 'Level #1' would not long remain safe for use, and it was decided to construct a new track up the valley of the Cadjaw Pond Brook and around the 'Horseshoe' Bend, so as to relieve the necessity of maintaining the high trestling. This new track increased No. 1 Level by 2436 ft. in length, and although Plane No. 1 had 85 ft. added to its length and 15 ft. to its altitude, the grade of this new level was reduced to 47 ft. per mile. After the construction of this track around the Horseshoe, the high trestle was taken down. The use of water power to work these planes [on the light track back to Waymart] did not prove satisfactory and after a few years*, stationary steam engines were erected to take the place of such water power."

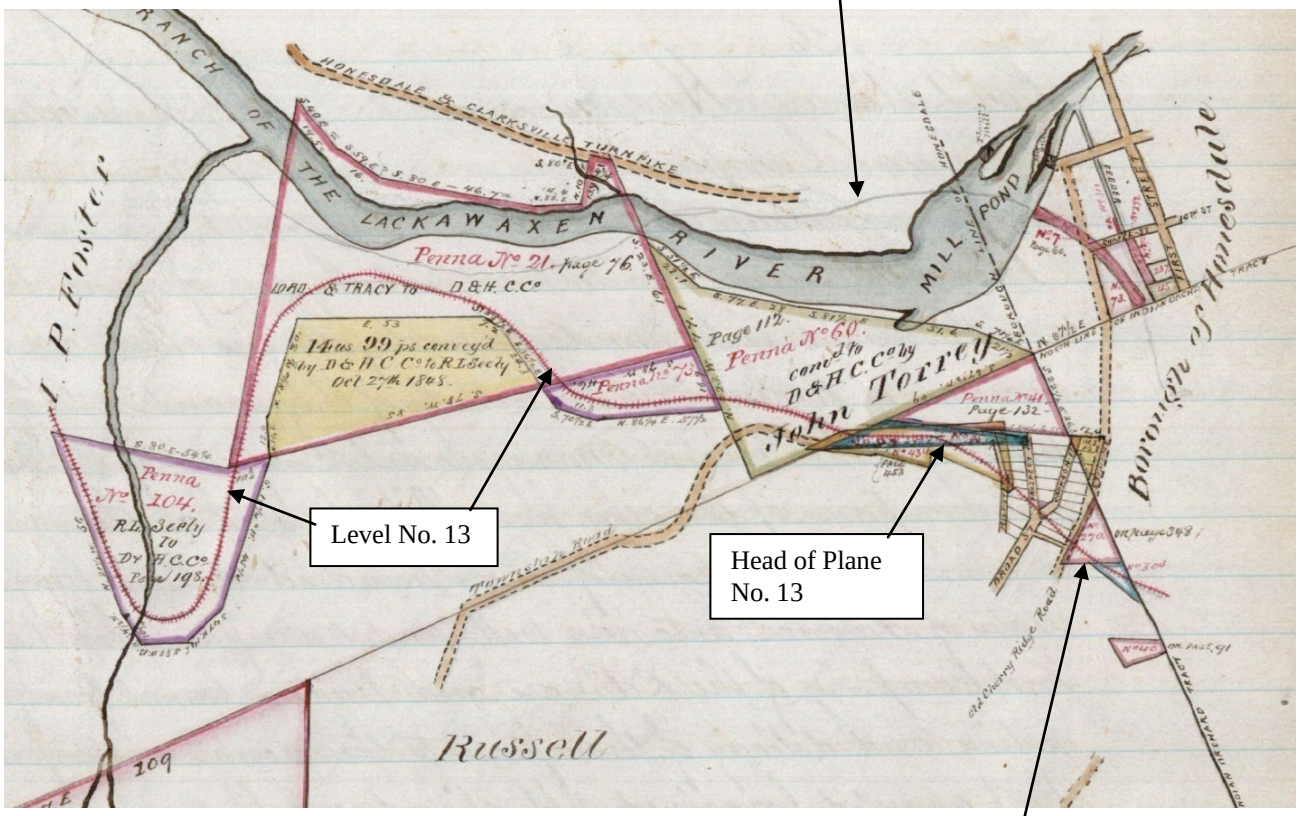
> *It was more than a few years. Water power was used on one or more of the light track planes between Honesdale and Waymart planes from 1845 to 1868.

Level No. 13, when established in the 1843-1845 revision, headed west from the engine house, crossing what would later be known as the horseshoe curve. This we can see on the detail given below from the 1895 Gravity Railroad map volume:

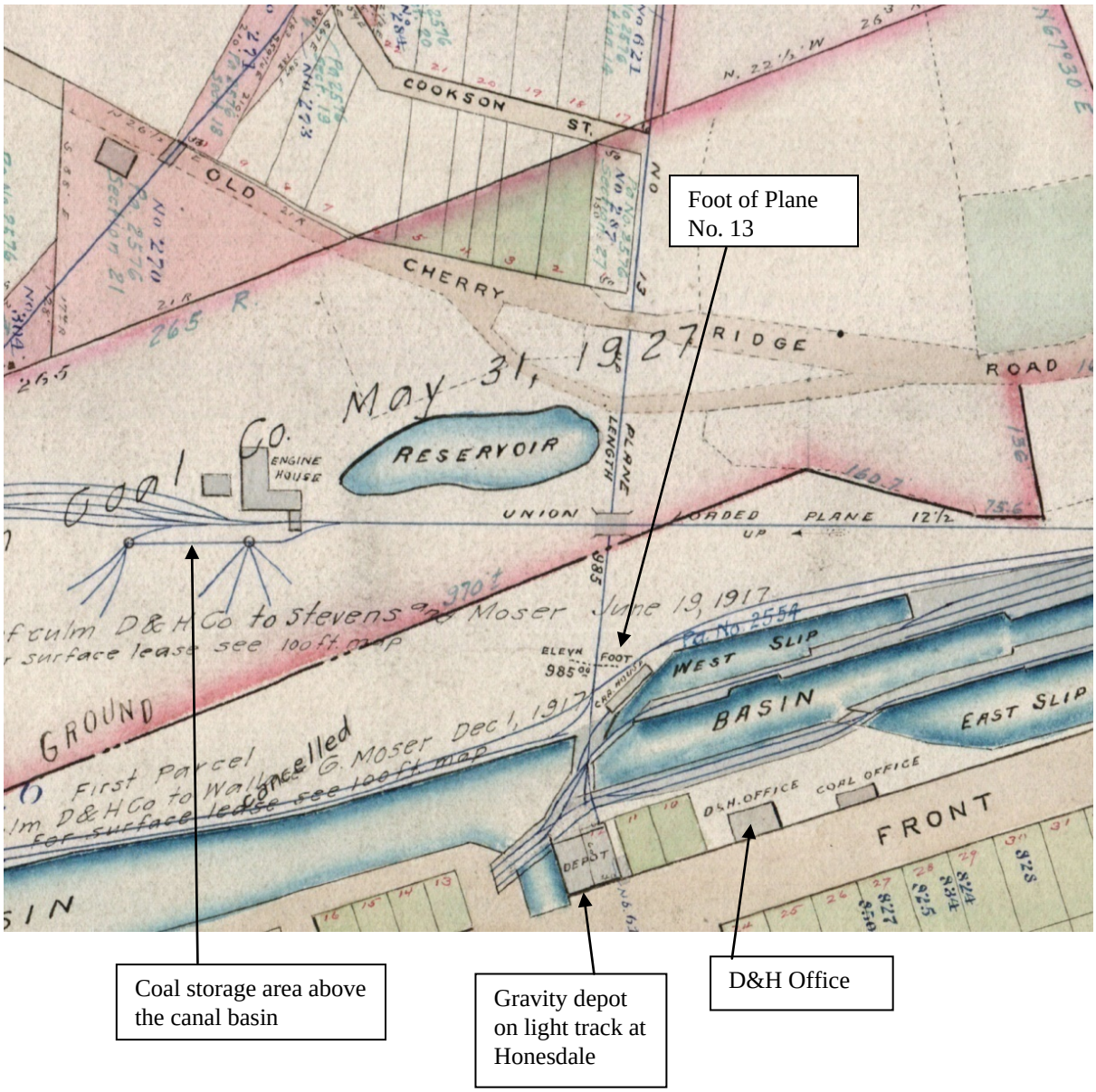


The position of Level 13 was later changed to go around the horseshoe curve.

All of Plane No. 13 and the beginning of Level 13, including the portion around the Horseshoe Curve, are shown on the map that illustrates the deed, dated May 25, 1845, between John Sayre and others and The Delaware and Hudson Canal Company. This deed is given on pages 93-94 of the *D&H Deeds PA;* the map is on page 95:


RANCH OF THE LACKAWAXEN RIVER
HONESDALE & CLARKSVILLE TURNPIKE
MILL POND
Penna No 21. Page 76.
ROAD & TRACY TO D&H C.Co
14 Hus 99 ps conveyed by D & H C Co to R I Seely Oct 27th 1848.
Penna No 73
Page 112.
Penna No 60.
conv'd to D&H C.Co by John Torrell
Penna No 41 Page 132.
Penna No 104. R I Seely to D&H C.Co Page 198.
Level No. 13
Head of Plane No. 13
Plane No. 13, 1845, 1859, 1868
Russell
109
Borough of Honesdale

The foot of Plane No. 13, at the Canal basin, and a good section of the plane, are shown in this detail from the 1895 Gravity Railroad map volume:

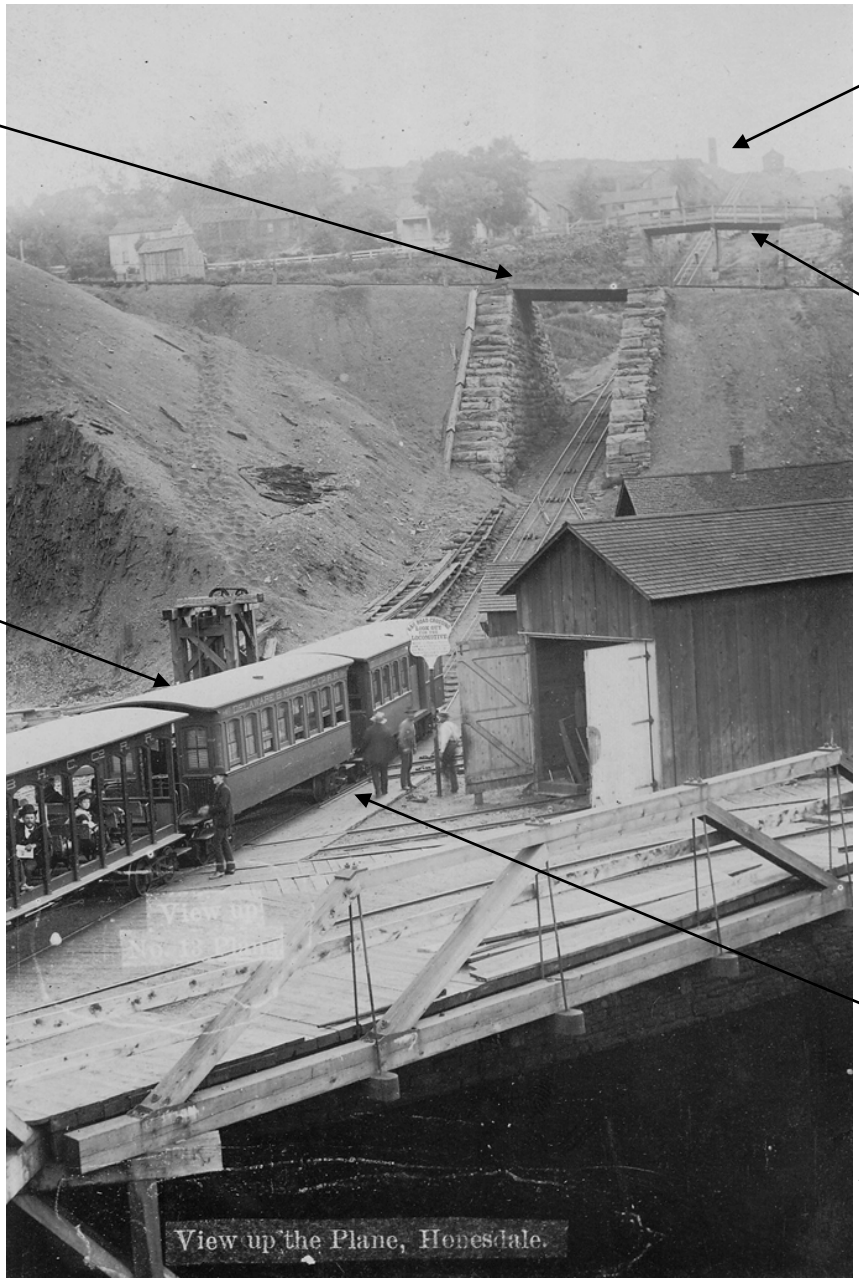


The foot of Plane No. 13 at the Canal basis in Honesdale, we learn from O. D. Shepherd, was 985 feet above sea level.

"Altitudes Again. / We are indebted to O. D. Shepherd, Esq. Chief Engineer of the D. & H. C. Co. of this city, for the following elevations, omitting fractions, above tide water, of various points on the Gravity R. R. of the Company: Foot of No. 13 Plane, Honesdale, 985. *(Carbondale Advance,* September 17, 1870, p. 3)

Given here is a view up Plane No. 13 that was taken by Hensel in the 1870s. At the top of the plane can be seen the smokestack at the engine house at the head of Plane No. 13.

View Up the Plane, Honesdale from *Orig. Photo Souvenir of Del. & Hud. Gravity Road. Published by L. Hensel, Hawley, PA.*



Smokestack at engine house at head of Plane No. 13

Bridge for Union Loaded Plane over Plane No. 13

Wagon bridge for Old Cherry Ridge Road over Plane No. 13

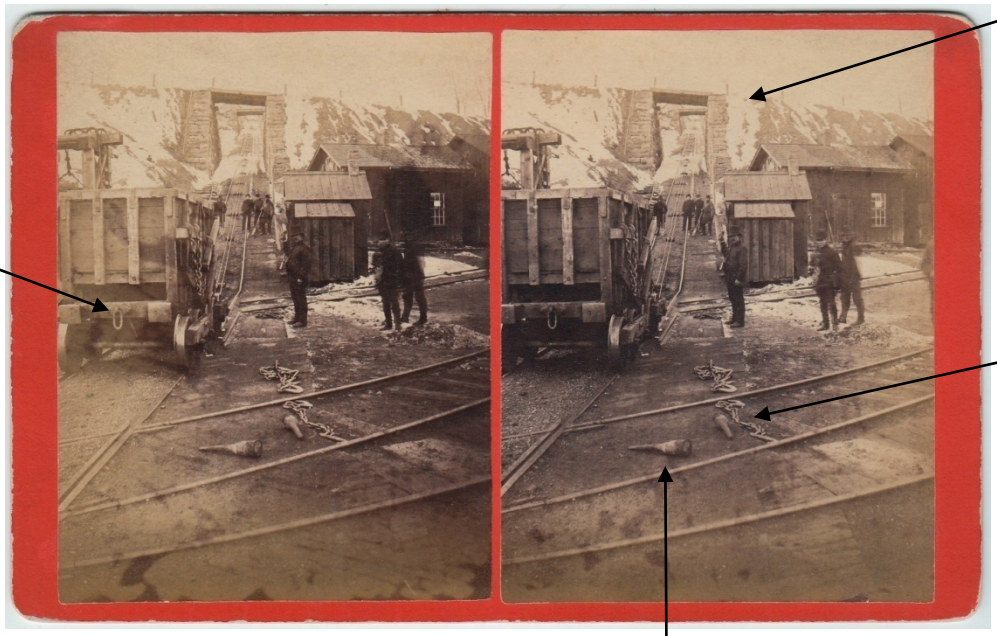
Two closed Gravity Railroad passenger coaches and an open-air passenger car

Foot of Plane No. 13 at Honesdale

D&H Canal, East Slip

Here is another Hensel view up Plane No. 13 (one of several, apparently, numbered 923). Note the slings and sprags on the ground in the center foreground.

Hensel stereocard No. 923: “View Up the Plane [No. 13], Honesdale” from “Stereoscopic Views of Honesdale, PA. Photographed and Published by L. Hensel, Port Jervis, N. Y.”



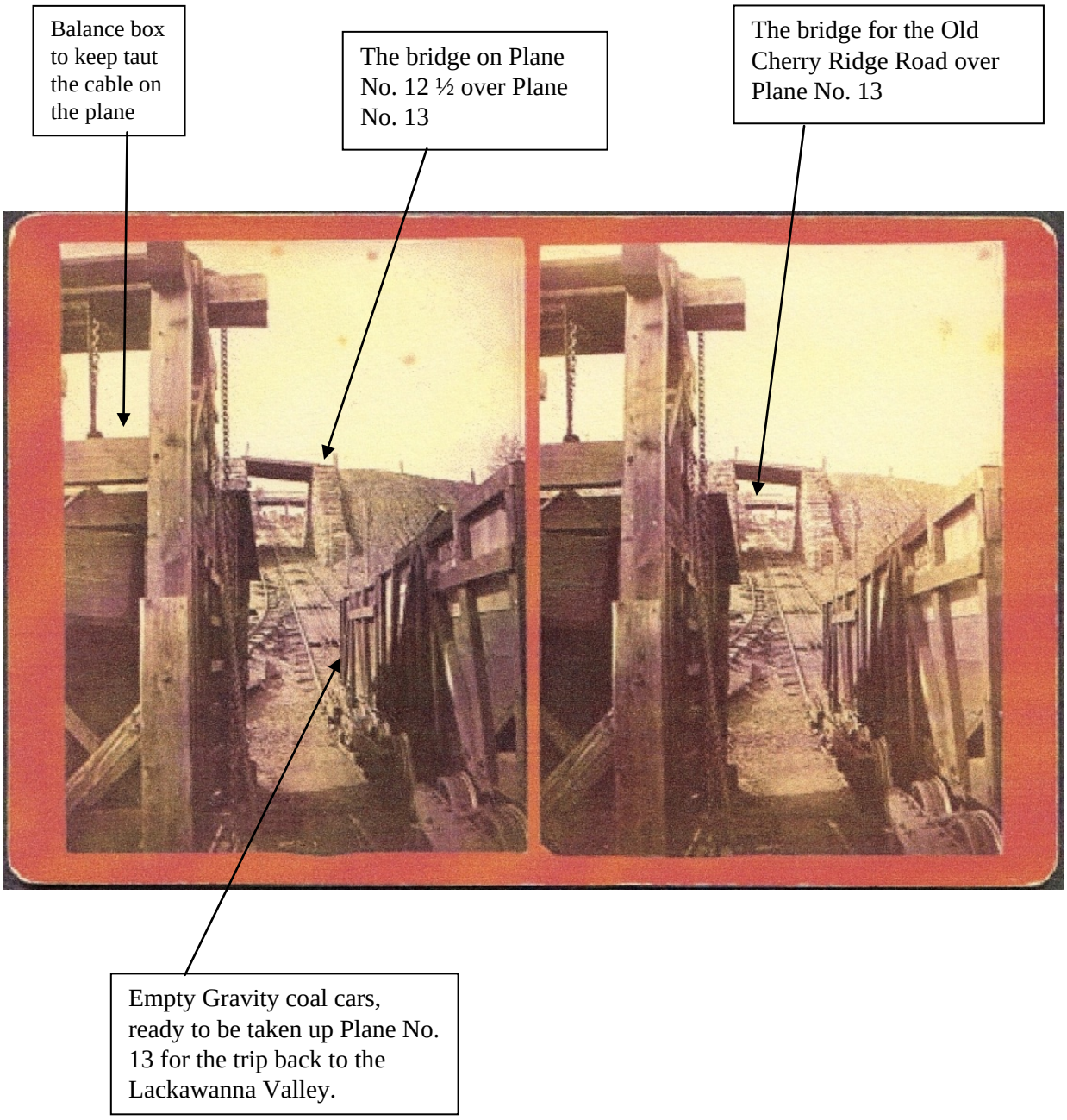
Union loaded plane, Plane No. 12 1/2

One end of a chain sling was hooked into this ring, the other end was hooked into the cable in the plane that raised or lowered the cars on the plane

Chain sling: used to attach cars to the cable in the middle of the plane

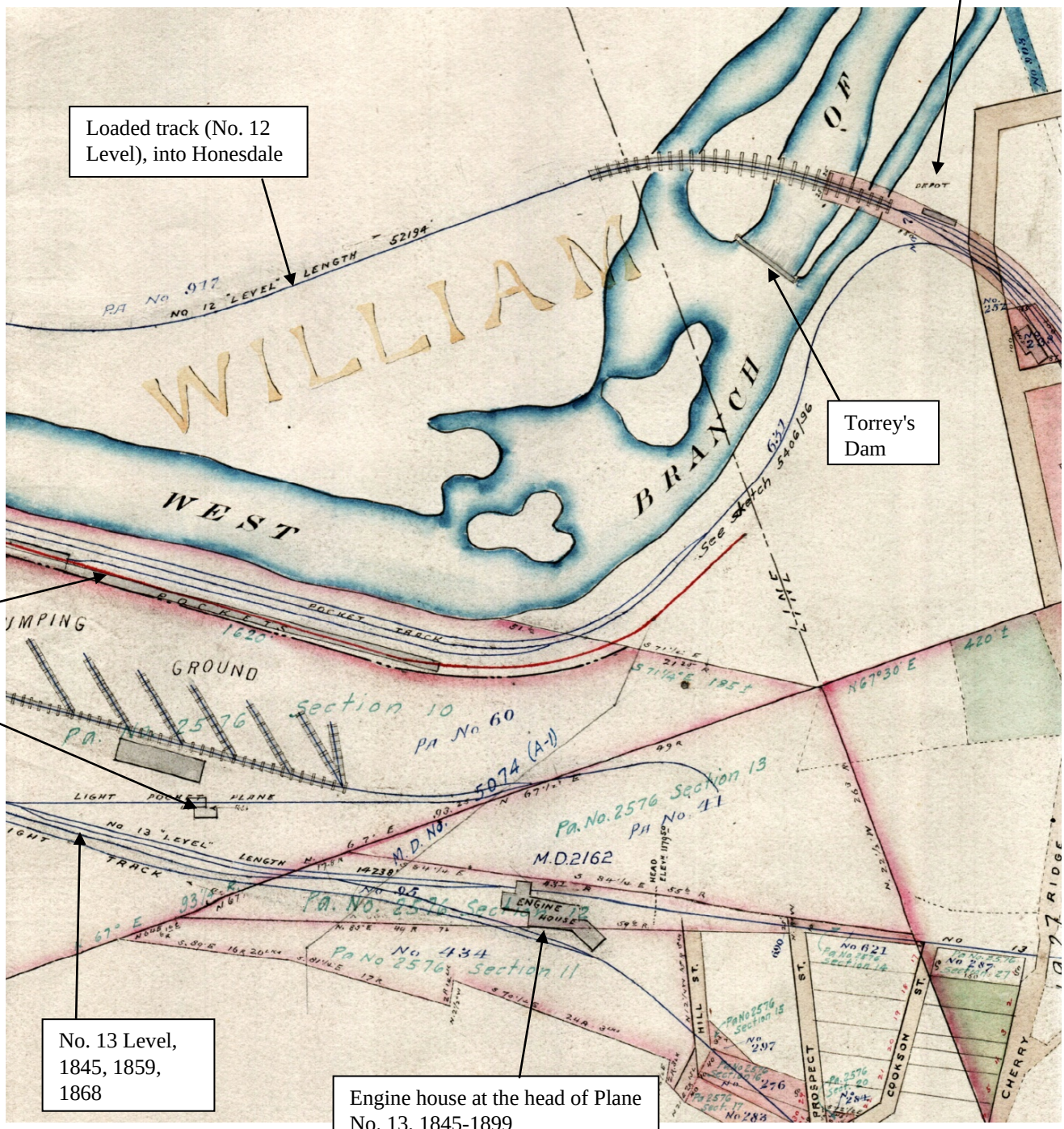
Sprag: A piece of wood / a peg inserted between the wooden truck side frame and lug on the face of the car wheel. "It was common practice to stop gravity trains by the use of pegs called *sprags*. . . and trainmen developed much dexterity in throwing them into place rather than stopping to position. / The majority of gravity cars were not equipped with brakes. The brake, peculiar in design, was of the pull-up type, having four solid cast iron combination brake heads and shoes which hung between the wheels and, when pulled up, effected a wedging action against the wheels, thus retarding movement. There were six levers (three on each side of car), one foot or power lever on the end, one cross bar, four yokes, eight adjusting bolts to take up the slack between shoe and wheel, and two equalizing chains and pulleys. Braking power was induced by pressure through the unique arrangement of levers and was controlled from the end foot lever by the brakeman. In making up trains, the cars with brakes were distributed at suitable intervals, dependent upon the length and weight of trains." *(The Delaware and Hudson Company / Board of Managers / Inspection of Lines : : / June 2, June 5, 1927,* p. 13).

Shown below is another Hensel view up D&H Plane No. 13. This Hensel is in the archives of the Minisink Valley Historical Society, where it is identified as “923 View up the Plane, Honesdale.” It is, nevertheless, certainly Plane No. 13, and certainly a Hensel photograph.



The level between the head of Plane No. 13 and the foot of Plane No. 14 was 14,238 feet long (over 2 ½ miles), with a fall over the length of the level of 126.18 feet. The engine house at the head of Plane No. 13 is seen in the detail given below from the 1895 Gravity Railroad map volume.

The head of Plane No. 13



This view, from the head of Plane No. 13, Hensel stereocard No.1100: *Honesdale, seen from the Head of No. 13 Plane*

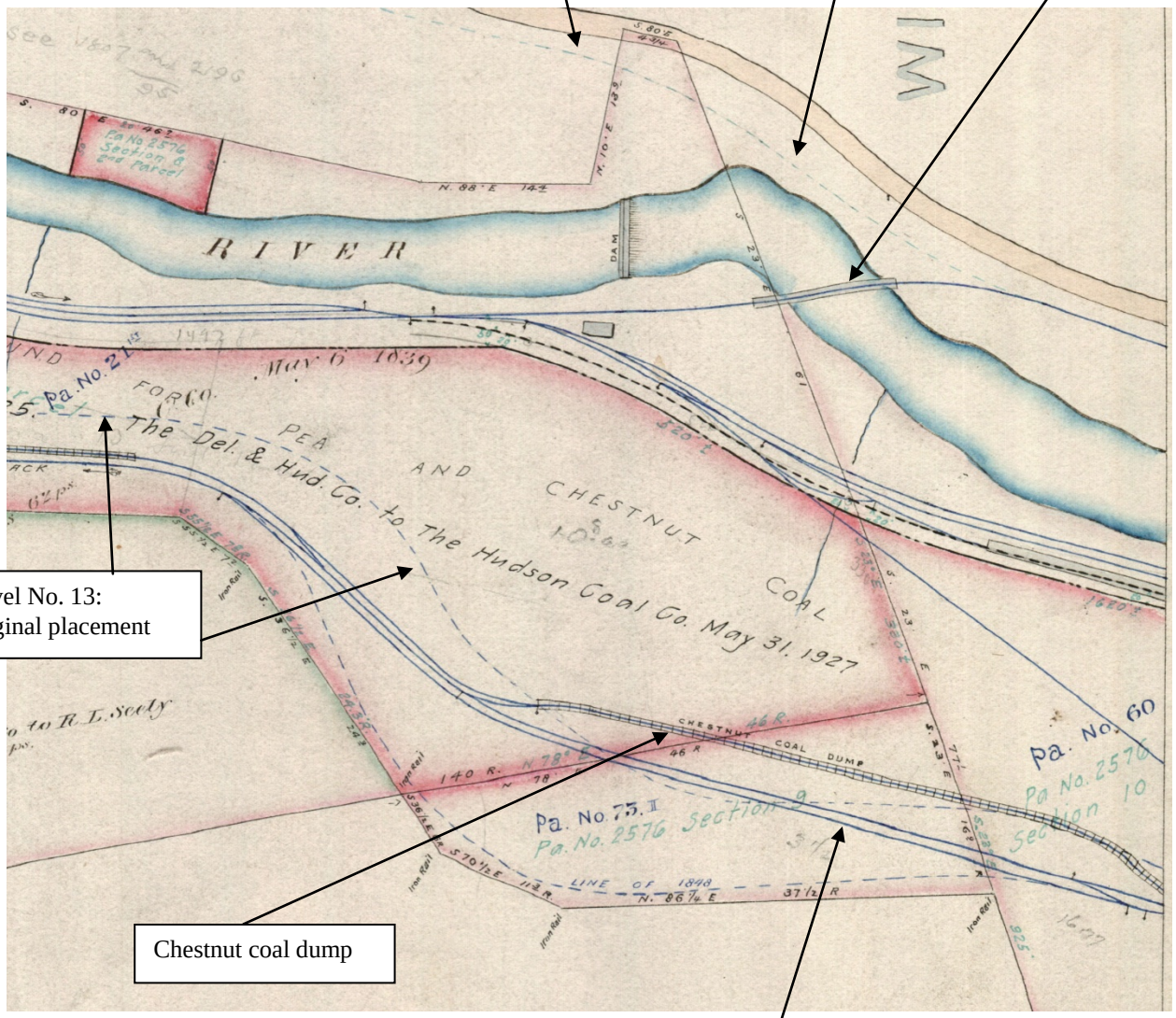
"This is Honesdale Cemetery. Burials were made there until 1860. The church just below the Cemetery was a Methodist Episcopal Church. Now it's a residential building," Kay Stephenson, Wayne County Historical Society, 11-29-2014

Plane No. 13, coming up the mountain

Level No. 13, Heading West. Detail from the Gravity Railroad map volume.

The Four-mile level in 1829 (for both loaded and light cars). Remarkably, in April 1901, after the closing of the Gravity Railroad, the possibility was discussed of establishing a new rail line on this former D&H roadbed between Prompton and Honesdale. This we know from an article that was published in the *Honesdale Citizen* of April 18, 1901: "A plan is on foot, which, if accomplished, will greatly improve the traveling between Honesdale and Prompton. It is proposed to make a new road starting at Whitney's farm, then striking the line of the old Del & Hud railroad on the east bank of the Lackawaxen which will be followed to Prompton. The Del & Hud used this track in 1829 to bring coal to Honesdale, but abandoned it a few years later [1843]. The new road will be perfectly level, shorten the distance, and entirely do away with 2 steep hills. The improvement contemplated is to be accomplished by individual enterprise, and should be encouraged by everyone who has to travel between the two towns. It is not proposed to abandon the old turnpike over the hills."

The loaded track (1843-1899) crosses the West Branch of the Lackawaxen River here, and then in a broad sweeping curve to the right, again crosses the Lackawaxen and enters downtown Honesdale.

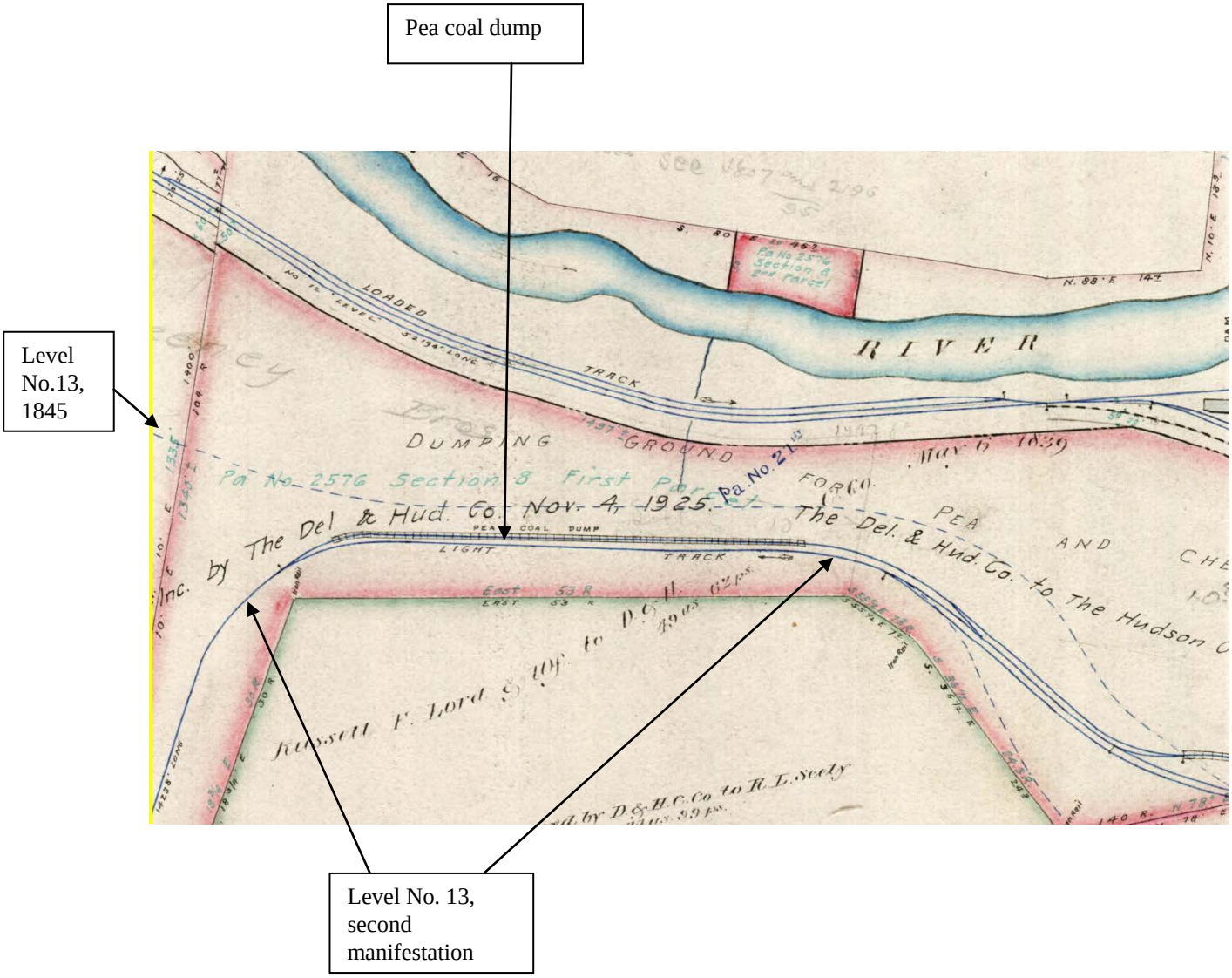


Level No. 13: original placement

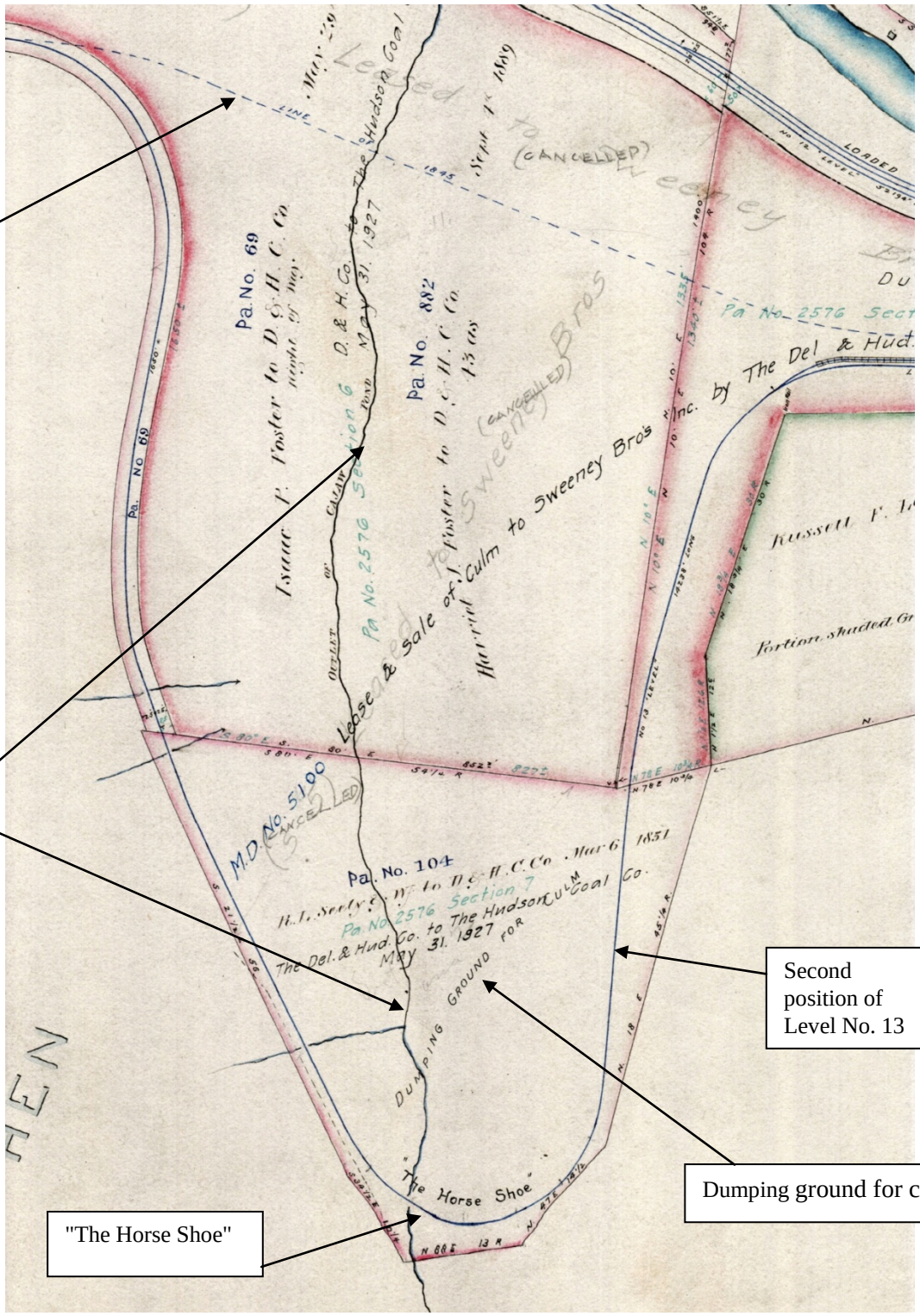
Chestnut coal dump

Level No. 13, second manifestation

Farther West. Detail from the Gravity Railroad map volume.



Around the Horseshoe: Shown below is the portion of the level around “The Horse Shoe,” to the west of Honesdale. Detail from the Gravity Railroad map volume.



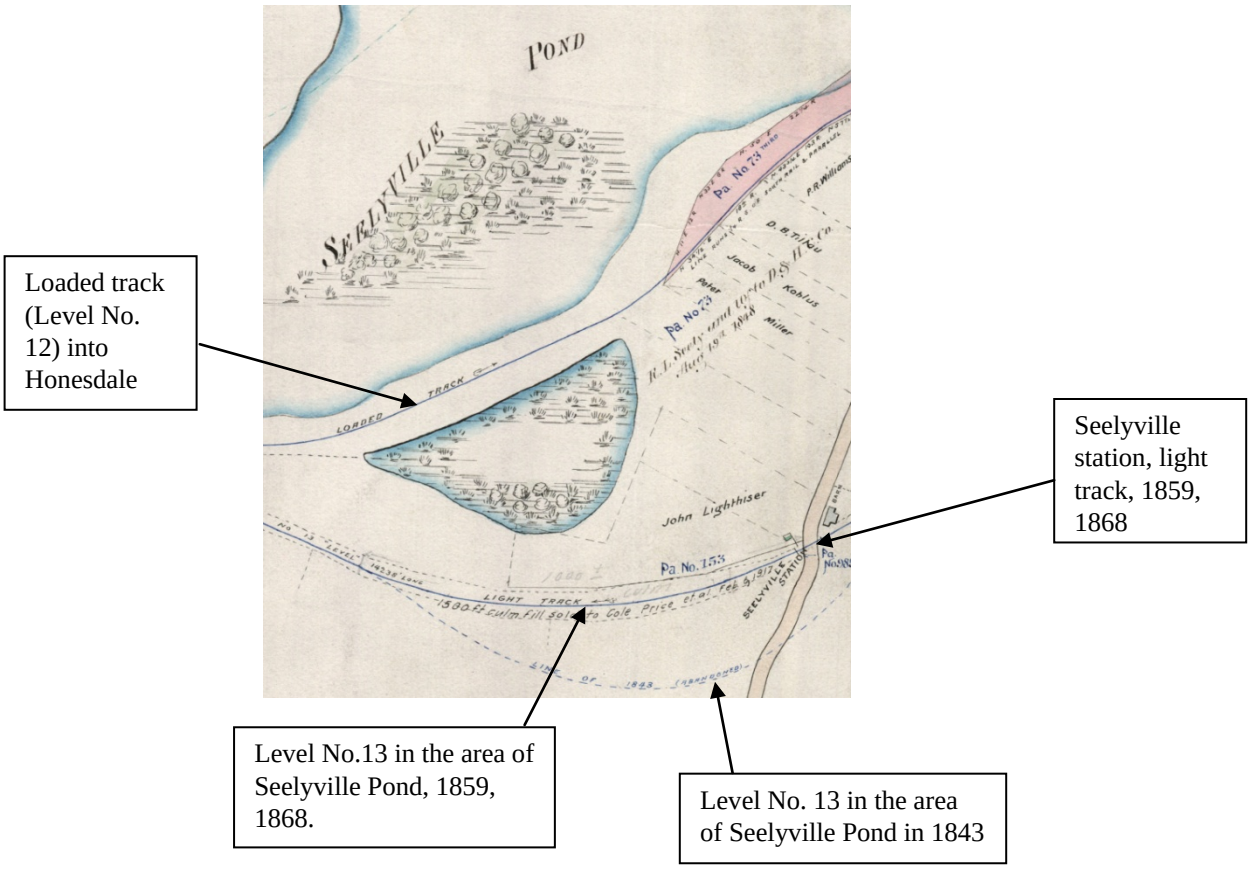
There were many coal storage areas on Level No. 13.

Winter Storage in Honesdale: On the question of winter storage of coal in Honesdale, James Archbald says the following in his February 1847 report to President John Wurts:

“At this place [Honesdale] also we have had to make some important additions to our original work, in order principally to enable us to deposit, during the suspension of canal navigation, the greater part of the coal brought over the railroad, amounting to from eighty to one hundred thousand tons. To this end it was requisite to provide ground to hold such quantity within reasonable extent, together with the engine power and machinery necessary to elevate, so that it can be piled with economy and dispatch, and with the increased facilities called for by our enlarged business to load boats, screen coal, and separate it into various sizes, carry off culm, or refuse dust, etc.”

Modifications in the location of Level No. 13 in the Seelyville Pond area after the 1845 installation of the light track are shown in the detail from the 1895 Gravity Railroad map given below.

The original location of the light track (No. 13 level) in the Seelyville area is indicated on the map with a dotted blue line: “LINE OF 1843 (ABANDONED)”. The revised placement of Level 13 in this area is also shown.



Modifications in the location of roadbed of the light track from Honesdale to Waymart, were made throughout the 1840s, 1850s, and 1860s, and it is especially wonderful that W. E. Anderson indicated those changes when he drew the 1895 maps. Those modifications reflect either the motive power changes on those planes (steam/water) or roadbed modifications to improve/facilitate the movement of the light cars through these planes.

After 1845, Gill's Latches and Cellar Hole No. 1 were inserted in Level 13. The exact year when those latches were installed has not yet been learned. They may well have been installed when the 1859 configuration was established, at which time production increased dramatically and increased storage facilities for coal became necessary in the Honesdale area. For a detailed discussion about Gill's Latches and Farnum's Latches, see Volume IV in this series.

After 1868, when the last of the water wheels on Planes 14, 15, 16, and 17 were replaced with steam power, very few modifications to the roadbed were made.

6005

Plane No. 14

--629 feet long (rise 102.55 feet)

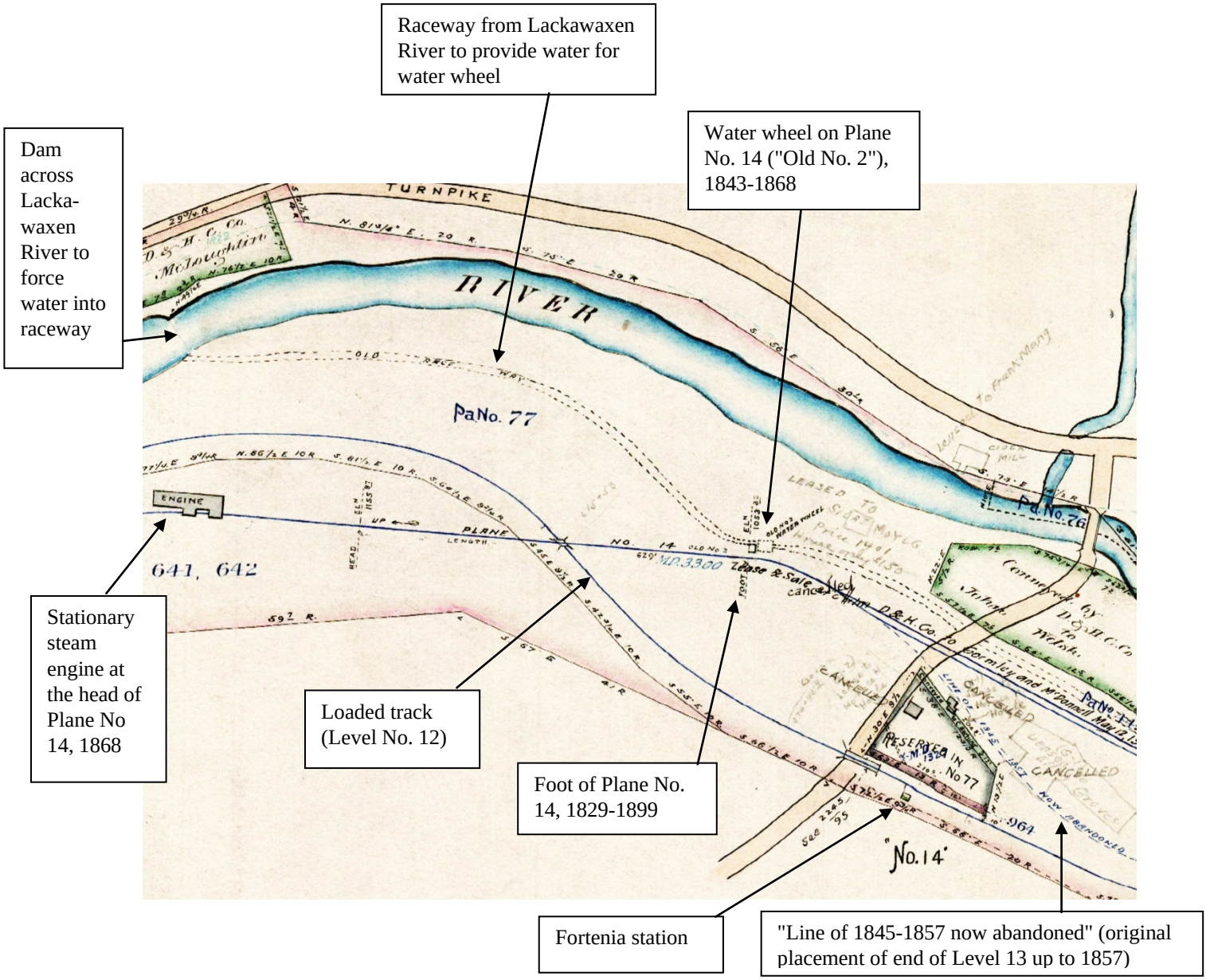
--water wheel there when light track opened in 1843; waterwheel replaced by steam engine in 1868

--Level 14 was 7,879 feet long (fall 66.45 feet)

Twenty-two runaway cars at the head of Plane No. 14 broke away on July 17, 1867 and smashed into another train at the foot of the plane. Twelve cars were destroyed.

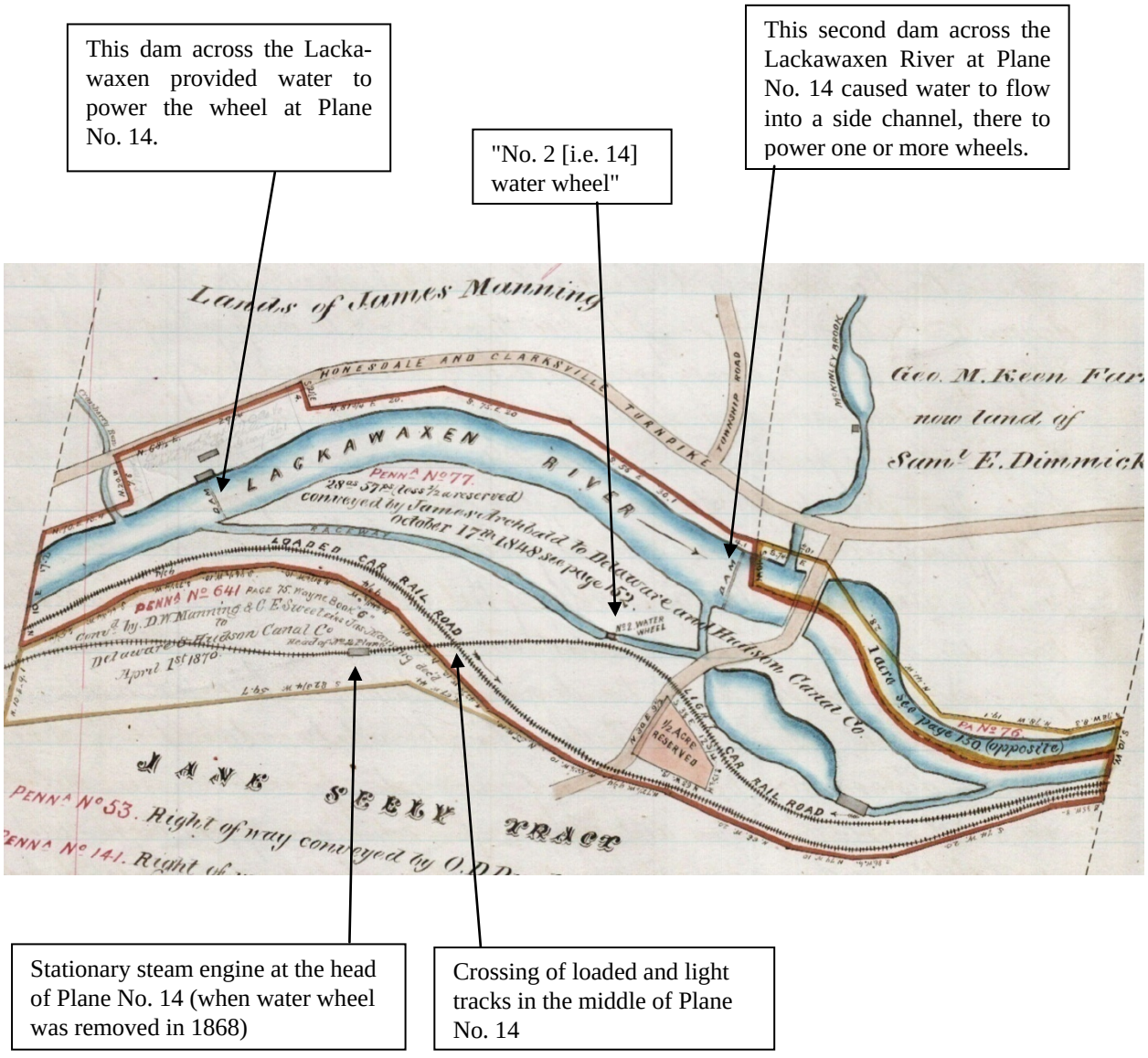
“On Saturday, 22 light cars broke away from the head of the plane, and started on their “own hook” for Waymart. At the foot of plane No. 2 [No. 14], two miles distant, they ran into another train, standing on the track, and twelve cars were made into kindling wood in a short time. . .” (*Carbondale Advance*, Saturday, August 3, 1867, p. 3)

Plane No. 14: Note that in this view from the 1895 Gravity Railroad map volume that the exact location of "Old No. 2 Water Wheel" (water wheel on this plane when installed in 1843 revision and there until 1868) is shown. Also shown is the "Old Race Way" (the race which supplied the water to power the wheel). It is called here "Old No. 2," i. e., the second plane out of Honesdale, i. e., Plane No. 14.



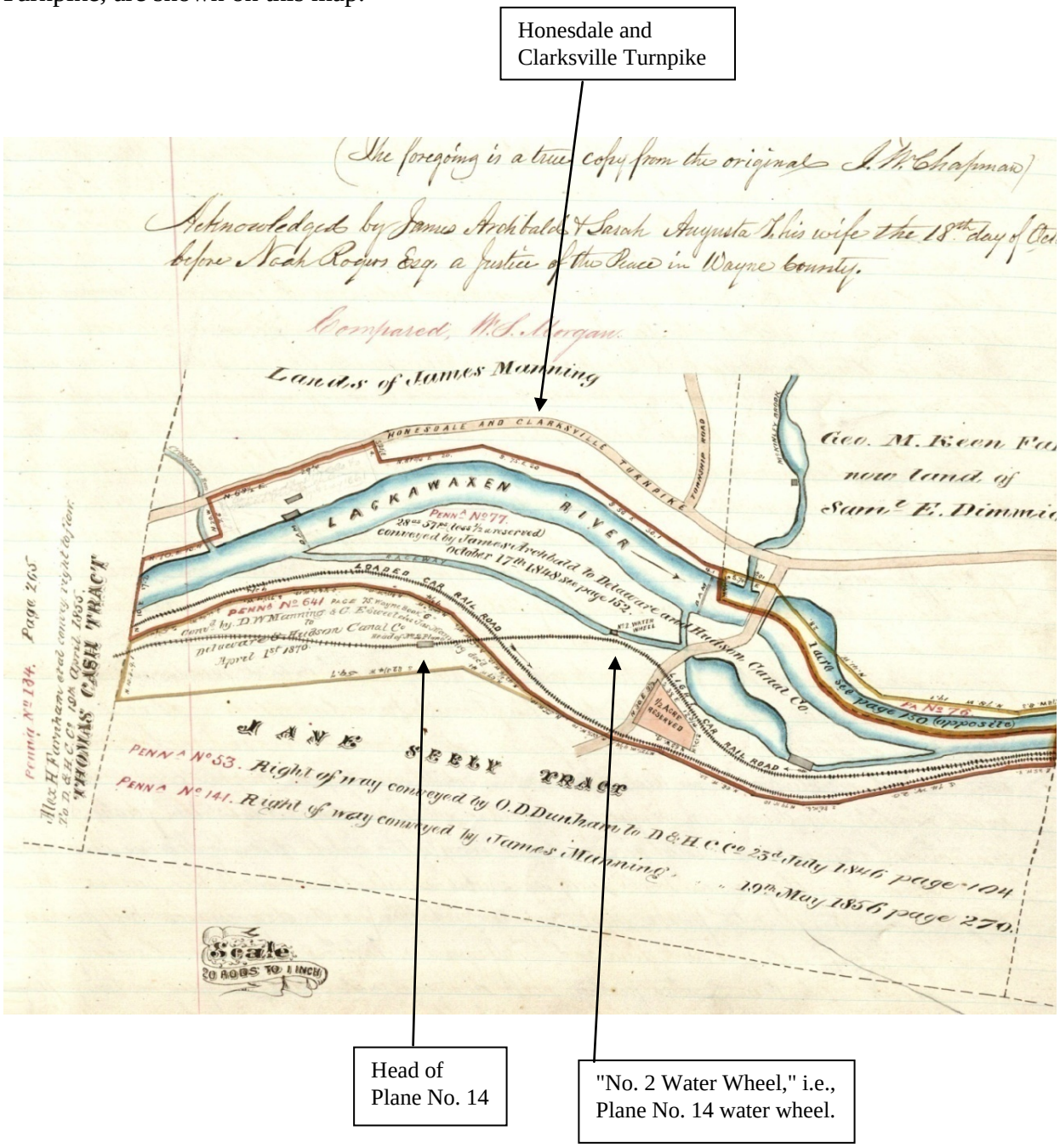
In the late 1850s, a thorough overhaul of the system took place, on both sides of the Moosic Mountain. At that time, the revised configuration of the light track from Honesdale to Waymart very probably became the light track that served from then until the closing of the system at the end of the 19th century. That revised configuration is what is shown in the 1895 Gravity Railroad map volume.

A second view of the Plane 14 area is given on the map on page 151 in the *D&H Deeds PA*, pp. 150-151, that illustrates the deed, dated October 17, 1848, between James Archbald and wife and The Delaware and Hudson Canal Company. Here is that map:



In the middle of Plane 14, the loaded track went under the light track (Plane 14), but there was no possibility of switching cars from light to loaded or vice versa there, as there was at Farnum's Latches or Gill's Latches.

In the *D. & H Deed book – Wayne,* on page 151, there is a map that illustrates the deed, pp. 150-51, dated October 17, 1848, between James Archbald and wife and The Delaware & Hudson Canal Company. On that map, the waterwheel on No. 2 (i.e., the second plane out of Honesdale, i. e., No. 14) is shown. Given below is a detail from that map. Note that there are dams across the Lackawaxen at both ends of the raceway that supplies water to the waterwheel here. Note also that both the Gravity Railroad's loaded and light tracks, as well as the Honesdale and Clarksville Turnpike, are shown on this map.

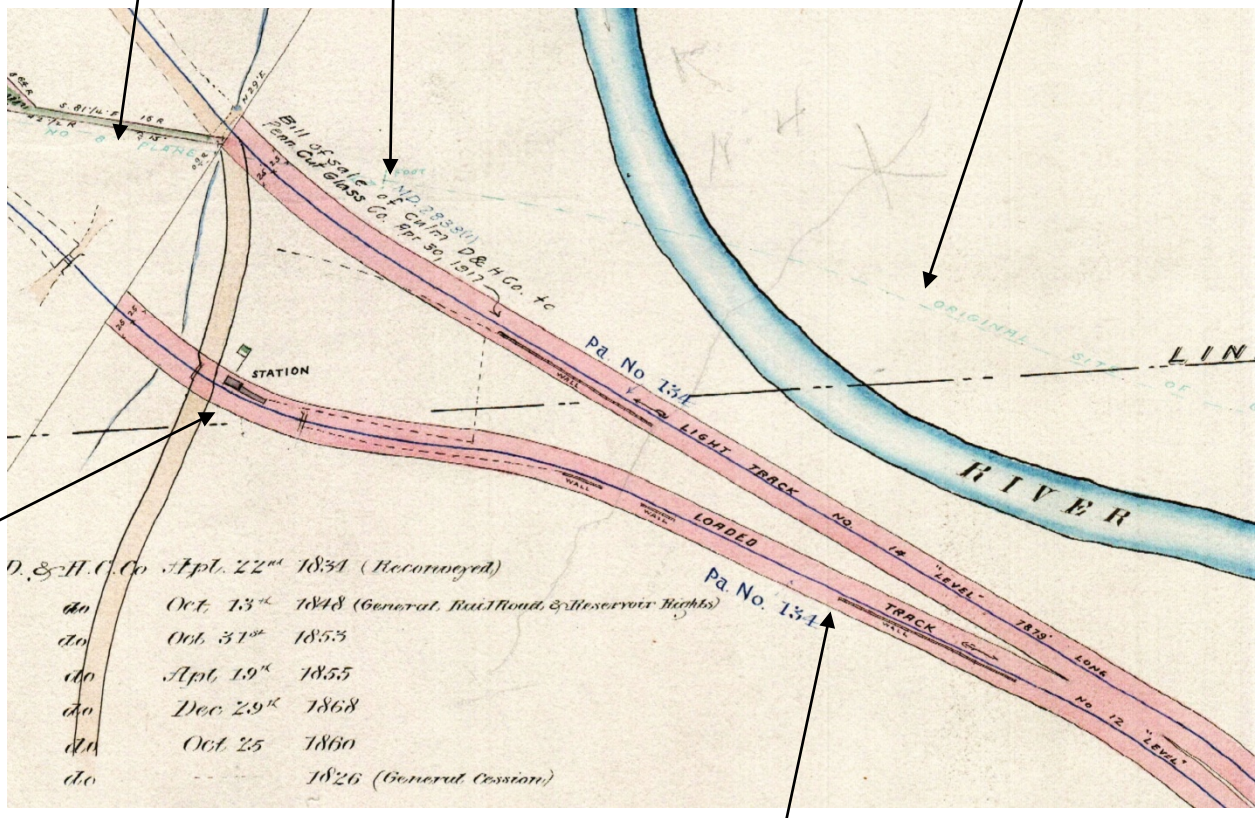


In this view from the 1895 Gravity Railroad map volume, we see a portion of Level 14, descending towards Prompton. On the loaded track, on the far left, is the Passenger Station on the loaded track at Prompton. We also see important data about the 1829 configuration: the location of the four-mile level (from the foot of Plane No. 8 to Honesdale)—on the other side of the Lackawaxen River from where the light track was positioned in 1843.

Foot of Plane No. 8, 1829 configuration

"No. 8 Plane," 1829 configuration

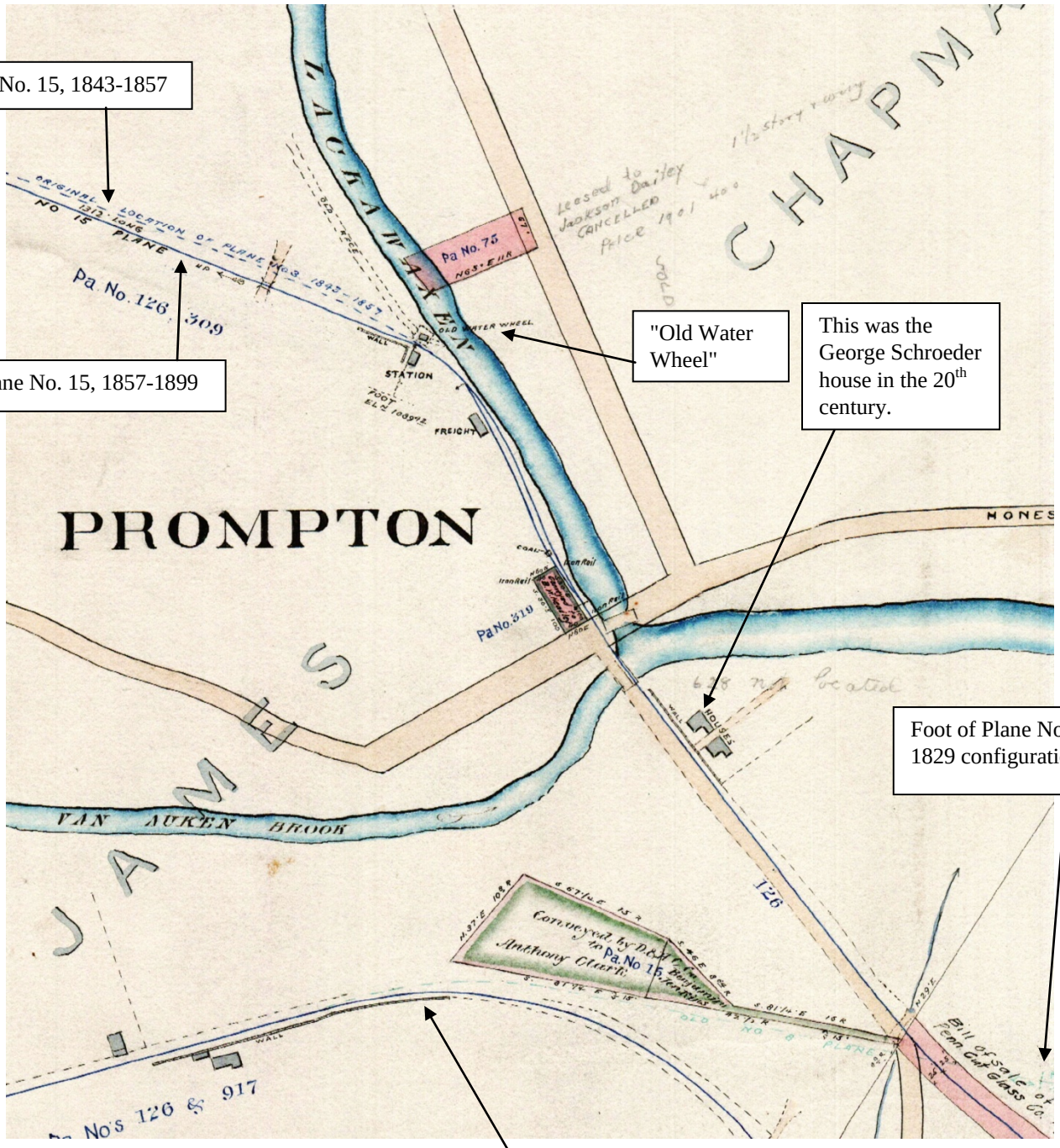
The text on the dotted blue line reads: "Original site of Gravity road for both tracks 1829." In the 1829 roadbed, the four-mile level crossed for the first time the Lackawaxen River at this point on the way into Honesdale. It stayed between the West Branch of the Lackawaxen and the Honesdale & Clarksville Turnpike all the way, and then crossed the Lackawaxen River once more in a broad sweeping curve to the right and then entered downtown Honesdale.



Prompton station on the loaded track

From 1843 on, the loaded track to Honesdale remained on the right side of the Lackawaxen most of the way to Honesdale. Just past Seelyville, it crossed the Lackawaxen River and ran close to the Honesdale & Clarksville Turnpike for a short distance (on the roadbed of the former four-mile level in this area) before again crossing the river in a broad sweeping curve into downtown Honesdale.

A second look at the Prompton area, showing all of Plane No. 8 in the 1829 configuration of the road and its relationship, in terms of location, of later manifestations of the Gravity Railroad. Note that it is at Prompton that the Van Auken Brook joins the Lackawaxen River.



After 1845, Farnum's Latches and Cellar Hole No. 2 were inserted in Level 14. The exact year when those latches were installed has not yet been learned. They may well have been installed when the 1859 configuration was established, at which time production increased dramatically and increased storage facilities for coal became necessary in the Honesdale area. For a detailed discussion about Gill's Latches and Farnum's Latches, see Volume IV in this series.

6006

Plane No. 15

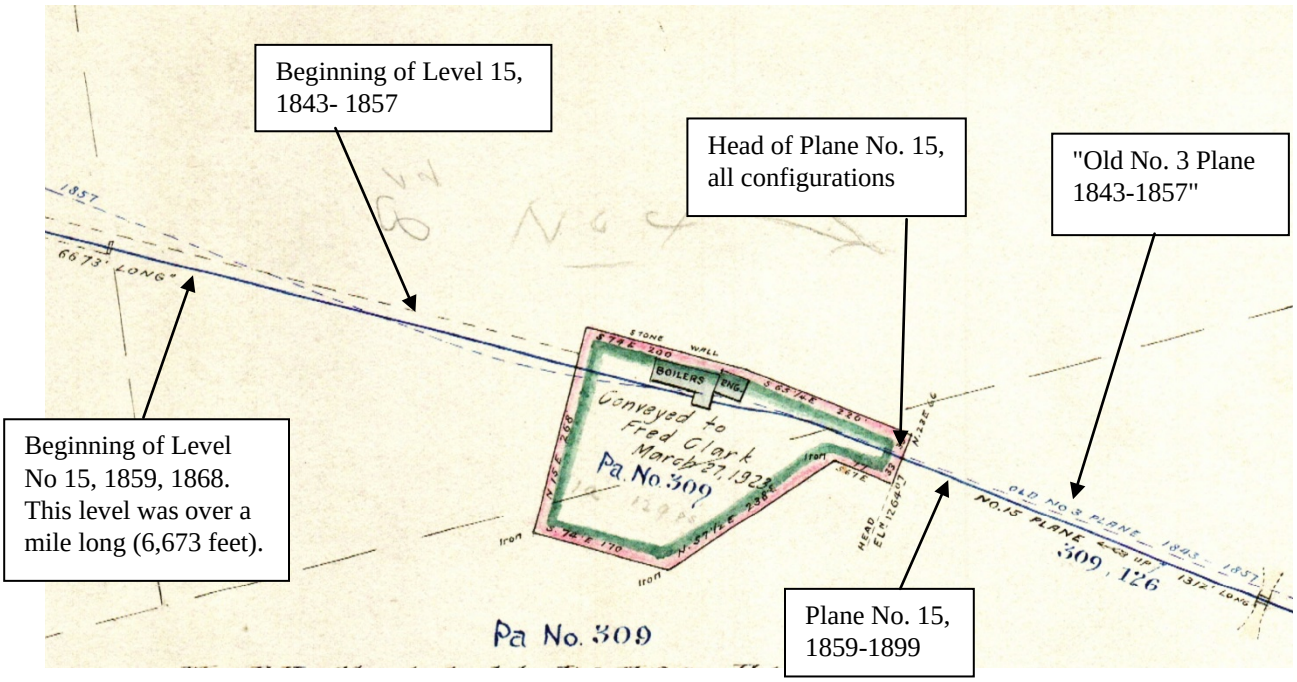
--at Prompton

--1,312 feet long (rise 174.65 feet)

--Level 15 was 6,673 feet long (fall 55.87 feet)

1895 Gravity Railroad map: Prompton: 2 views

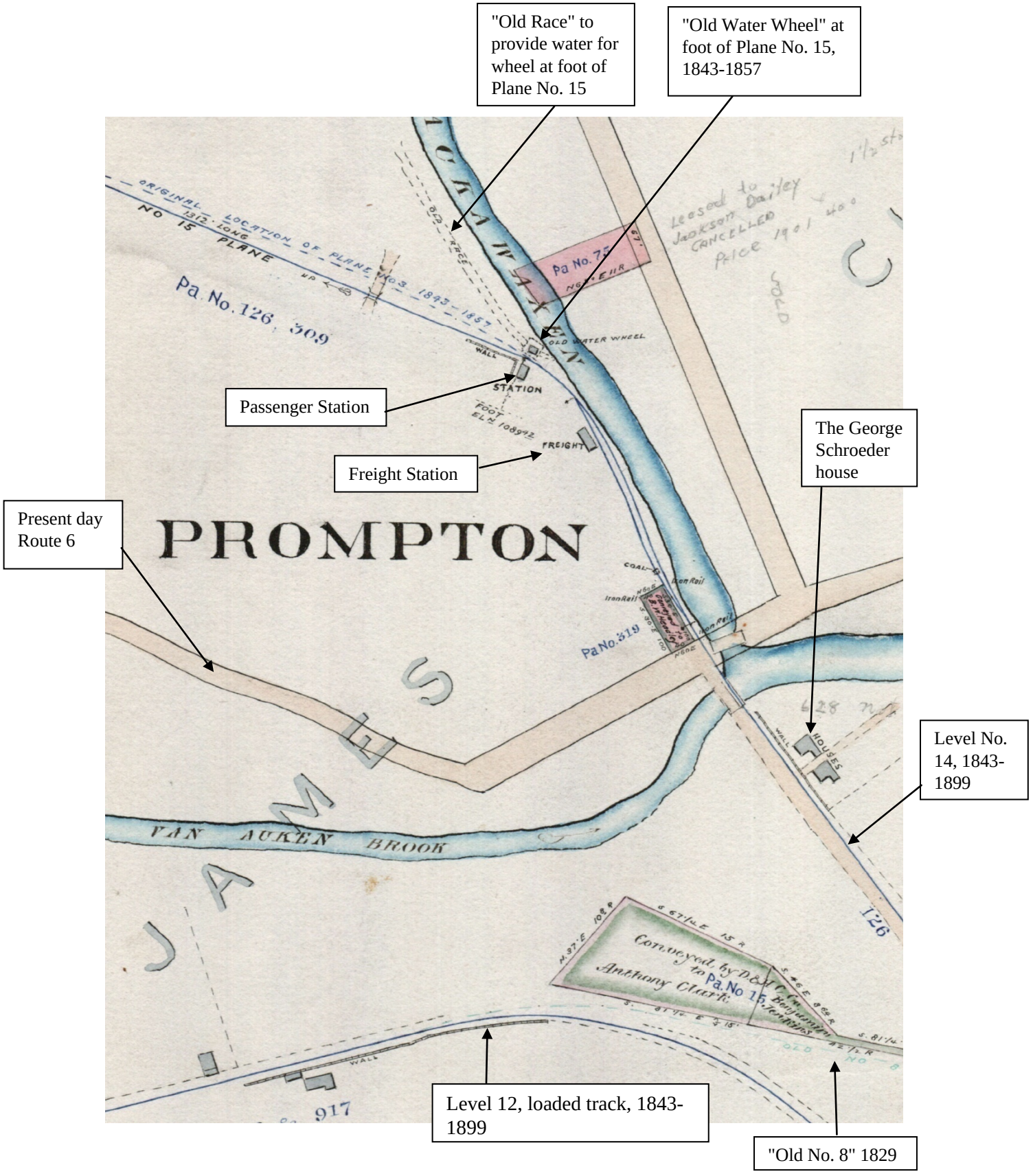
The first view: The engine house at the head of No. 15 Plane, which was 1,312 feet long in the 1859 and 1868 configurations. We also see the beginning of Level 15 (1859, 1868), which was 6,673 feet long, which went West on the North side of the present auto highway for at least a mile and then came down the grade, at Steene, and crossed both the highway and the Van Auken at Steene. Marked in blue on this map is the original location of the light track through this area when the light track was installed in 1843.



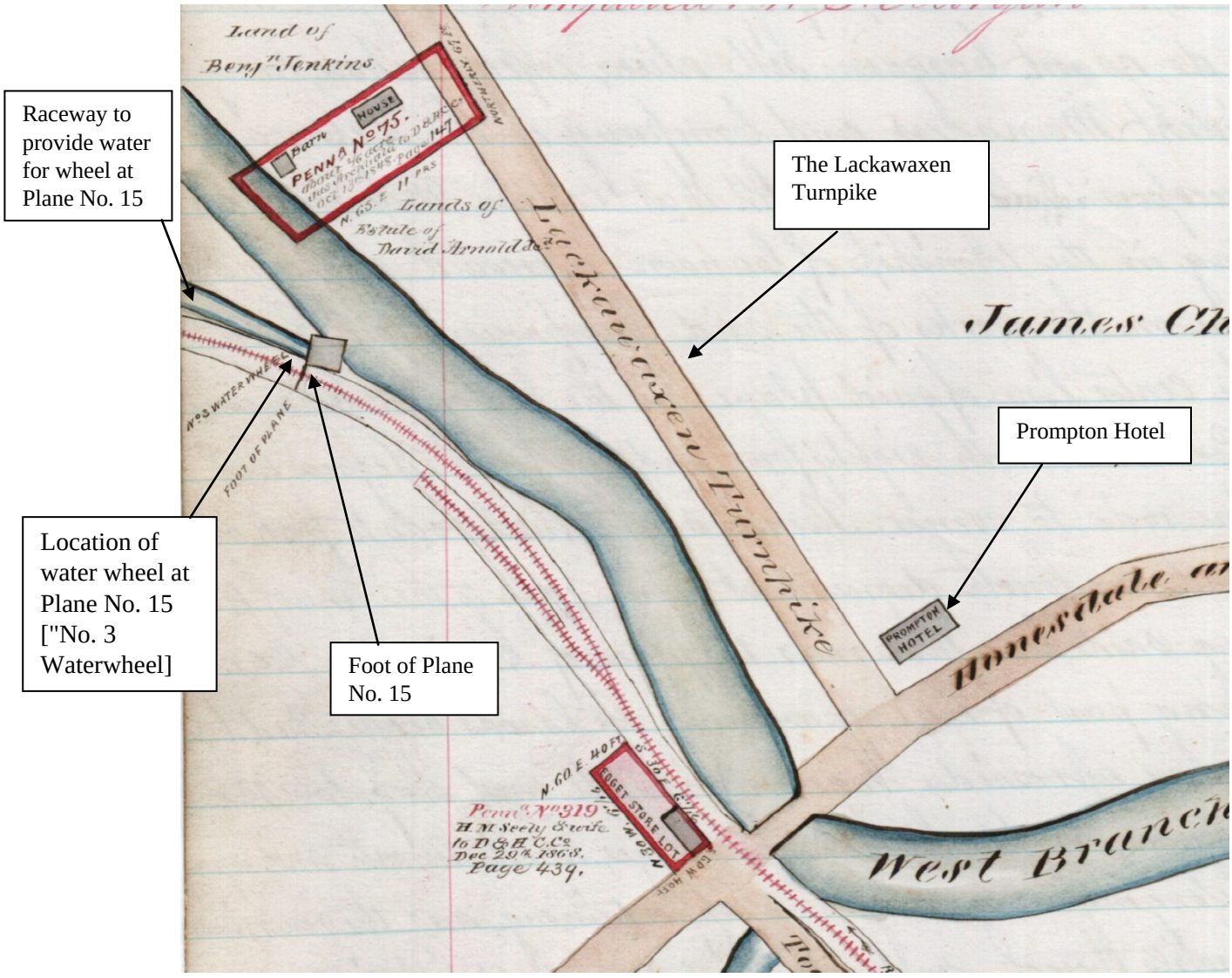
The second view: In this view, we see the Loaded Track coming down into Pompton. Just after it crosses the road above George Schroeder's house (the house in the lot marked "628"), was the passenger station, on the north side of the track. Level 14 goes right in front of George Schroeder's house and crosses the Honesdale Turnpike to the foot of No. 15, where the passenger and freight stations on the light track at Prompton are located. The original location (1843) of the light track/Plane 15 is marked in blue.

The location of the "Old Water Wheel," which powered this plane (called No. 3, i. e., the third plane out of Honesdale, i. e., No. 15) when it was installed in 1843, is shown. The "Old Race" (dotted lines) from the Lackawaxen is also shown. Note that Plane No. 15 (1,312 feet long) is a little to the south of the "Original Location of Plane No. 3 [the third plane out of Honesdale, i. e., Plane No. 15] 1843-1857." The present location of Plane No. 15 is the site of the plane, then, from 1857 to the end of the nineteenth century, when the 1895 Gravity Railroad map in question was drawn.

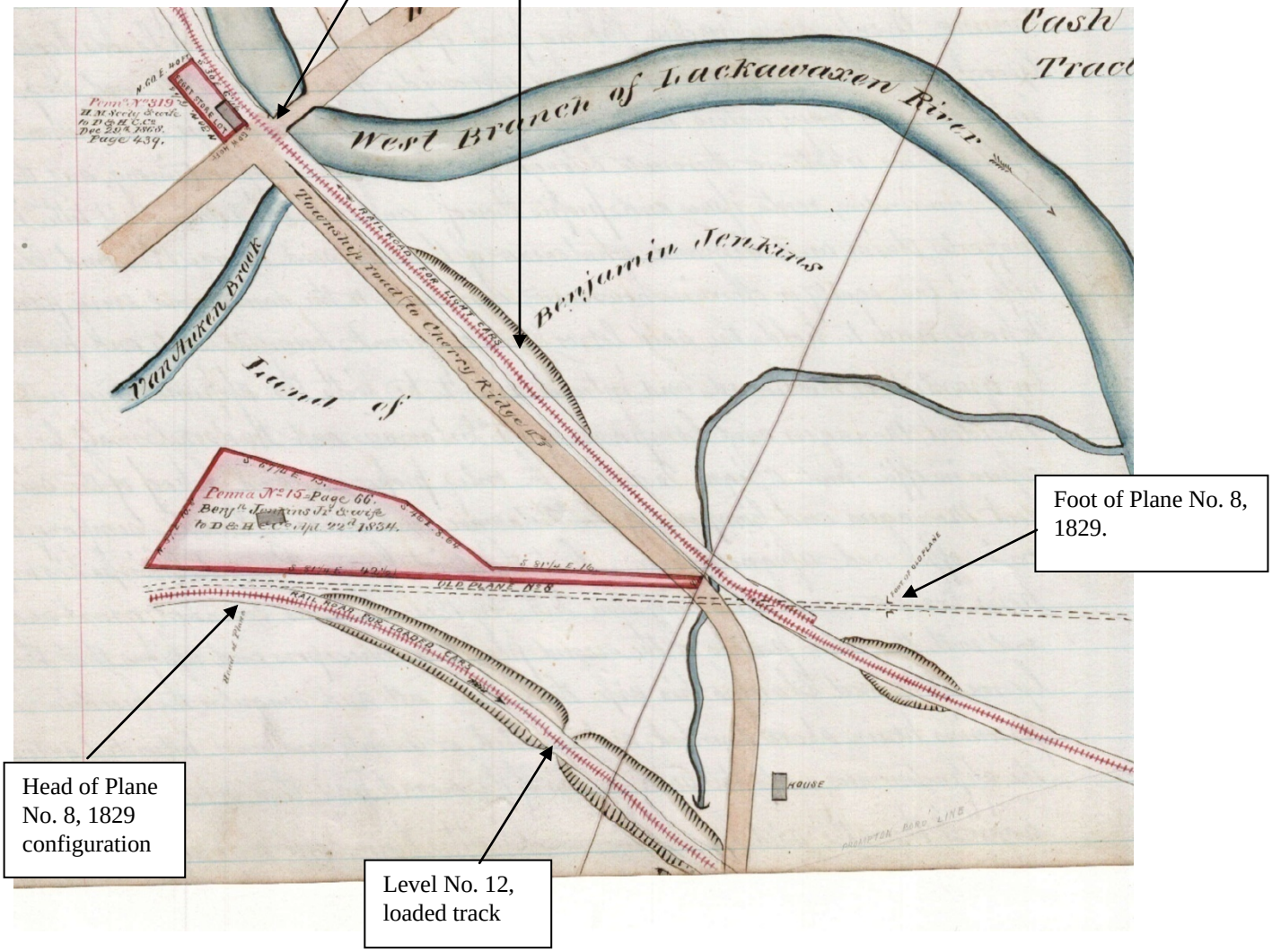
Note that on this map detail, the exact location of "Old No. 8 Plane" (in the 1829 configuration) is shown at the bottom of the map, a little to the north of the loaded track (the 10-mile level, also known as Level 12) as it descends through Prompton.


"Old Race" to provide water for wheel at foot of Plane No. 15
"Old Water Wheel" at foot of Plane No. 15, 1843-1857
Passenger Station
Freight Station
The George Schroeder house
Present day Route 6
Level No. 14, 1843-1899
Level 12, loaded track, 1843-1899
"Old No. 8" 1829
PROMPTON
VAN AUKEN BROOK
ORIGINAL LOCATION OF PLANE No. 3 1843-1857
NO 15 PLANE
Pa. No. 126, 309
Pa No. 319
OLD WATER WHEEL
STATION
FREIGHT
HOUSES
Leased to Jackson Bailey CANCELLED
Conveyed by D. & H. C. Co. to Pa. No 15, Anthony Court.

A second map view of the area shown in view two above is given in the *D&H Deeds PA* on the map on page 86 that illustrates the deed, pp. 85-86 between George Rix and wife and The Delaware and Hudson Canal Company, dated December 27, 1842. Like view two above, the map given immediately below contains a wealth of details about the site (including the exact location of the Prompton Hotel) and the roadbed.



Here is a larger view from that same Rix deed mentioned above: map on page 86 that illustrates the deed, pp. 85-86 between George Rix and wife and The Delaware and Hudson Canal Company, dated December 27, 1842. Note that the exact locations of the Head and the Foot of "Old Plane No. 8" are shown.



The above map is the only one known to exist where the exact location is shown of the head and foot of Plane No. 8 in the 1829 configuration of the Gravity Railroad.

Messrs. Evans and Kolus were both injured in acoal train accident at Prompton in 1853:

"*Accident on the Railroad*.--One day last week, as a coal train was passing near Prompton, one of the wheels broke, precipitating one or more of the cars off from the track. Mr. Evans, of this borough, who was riding on the train, was also thrown off, and seriously injured. Mr. Kolus, the runner of the train was also thrown off, and so fell that the train passed over his legs, crushing it in the most horrible manner. *Honesdale Democrat." (Lackawanna Citizen,* January 7, 1853, p. 2)

Hensel stereograph card No. 1106: *Looking toward Depot, at Prompton, on Light Track* (the depot at Prompton on the light track was at the foot of No. 15); the water shown to the right of the tracks in this photo is the West Branch of the Lackawaxen River.

6007

Plane No. 16

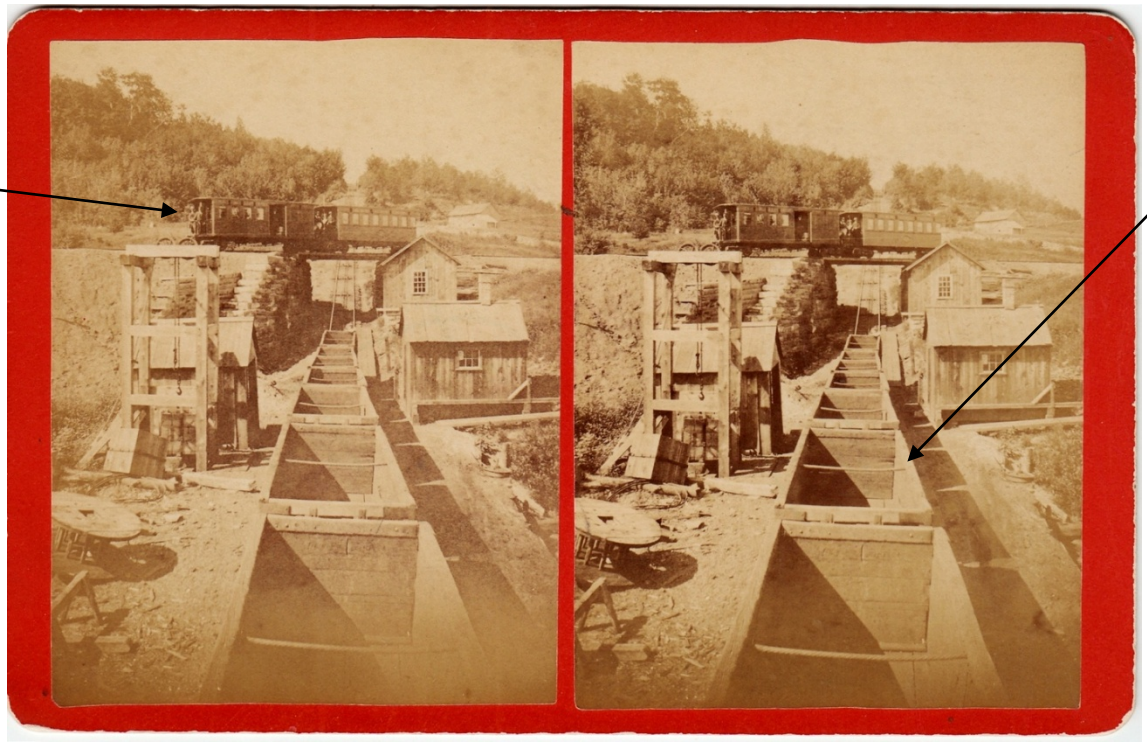
Loaded and Light tracks crossed near the foot of No. 16.

Plane 16: 1,027 feet long (rise 164.02 feet)

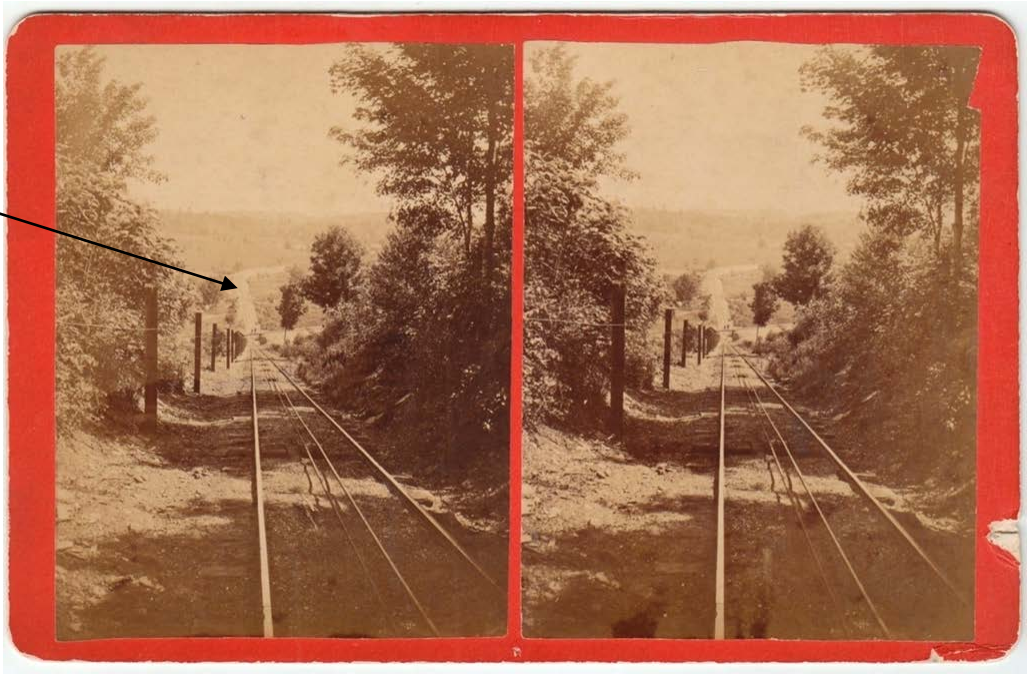
Level 16: 10,572 feet long (fall 89.72 feet)

Hensel stereograph card No. 1108: *Looking up No. 16 Plane, Passenger Train on Loaded Track.*

Getting your Bearings: When you're looking up Plane No. 16, you're looking in the direction of Waymart; the passenger car is moving to the left, towards Honesdale; when you're looking down Plane No. 16, you're looking in the direction of Honesdale.

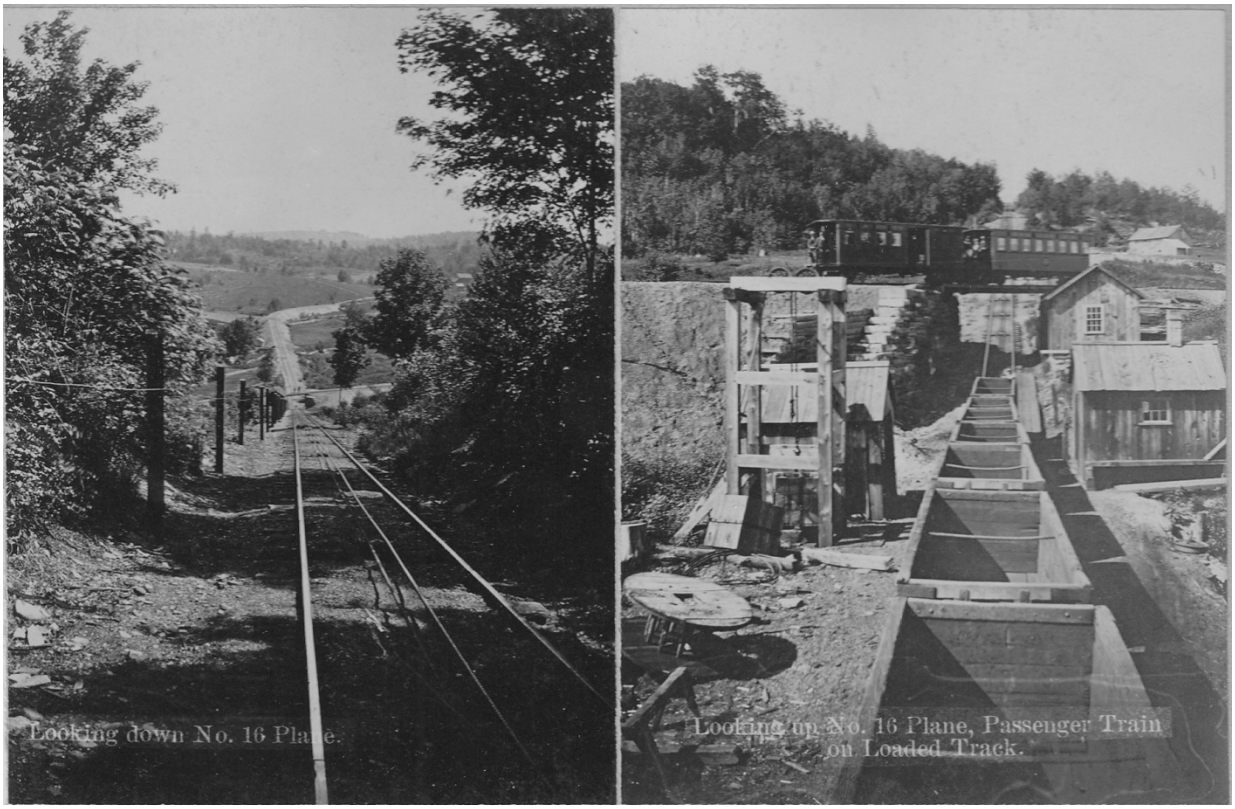


Hensel stereograph card No. 1109: *Looking Down No. 16 Plane*



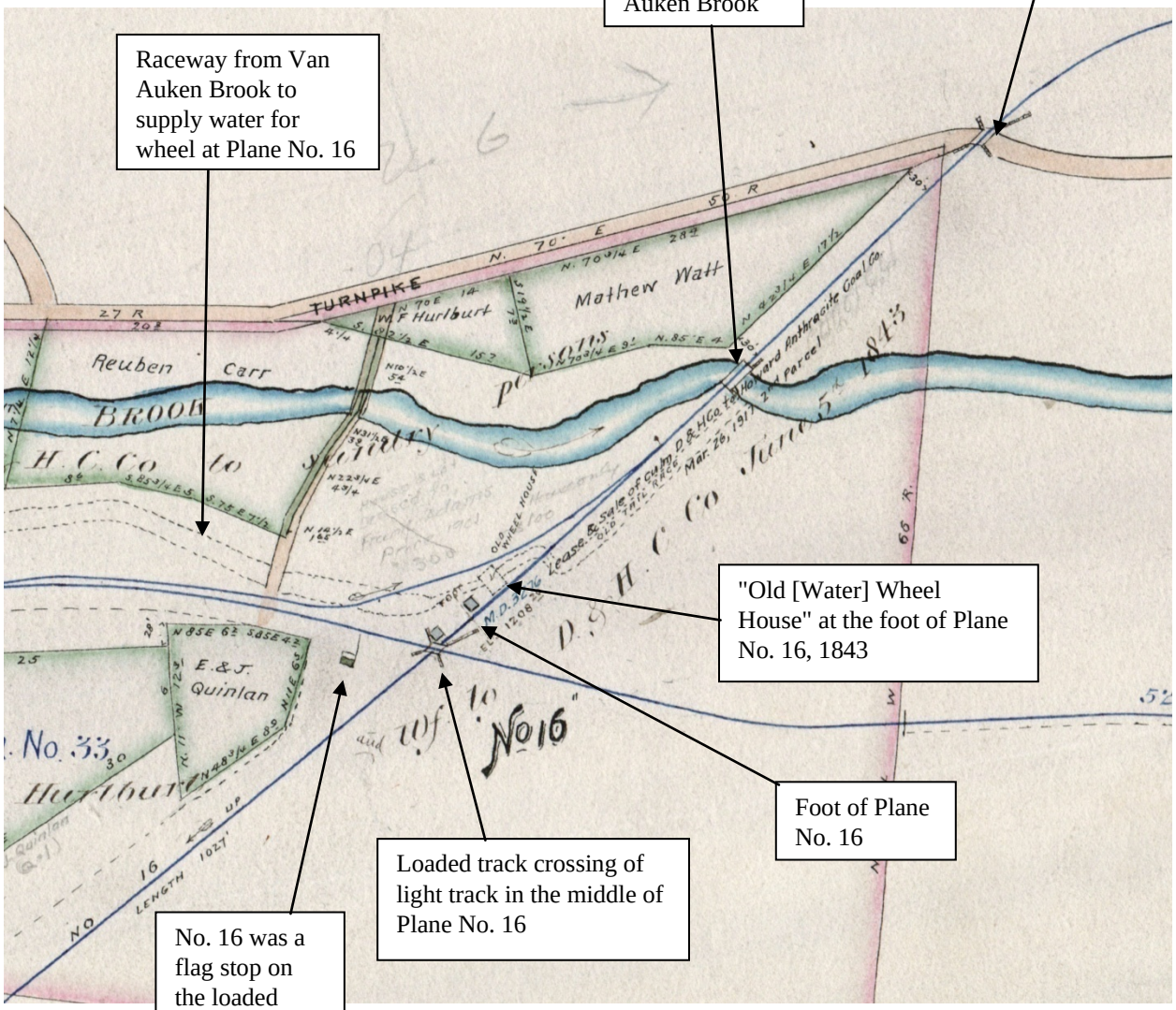
Level No. 15, under which passed the turnpike road to Honesdale

The same two photographs by Hensel, shown here in black and white in a souvenir booklet that Hensel created.

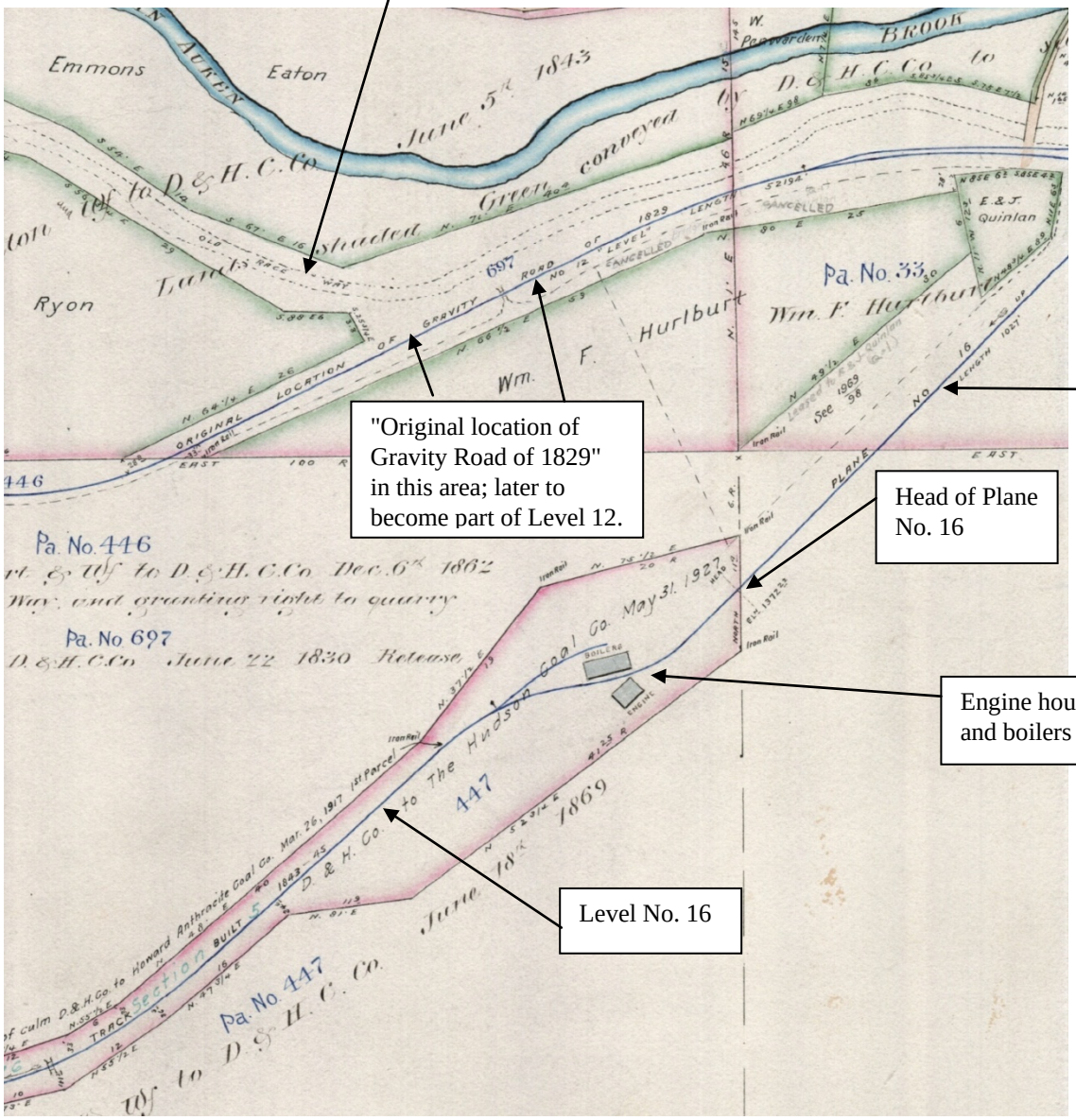


1895 Gravity Railroad map

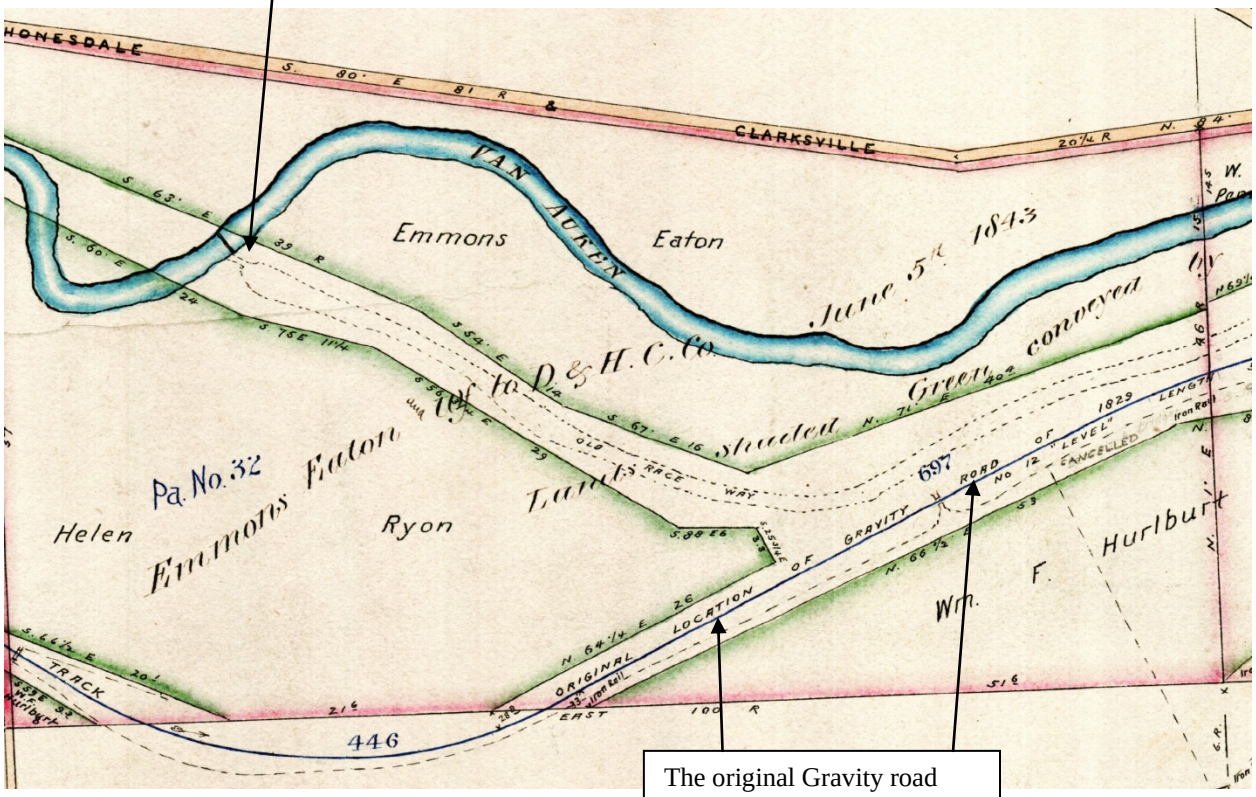
Plane No. 16. Note that on this map, the exact location of the "Old Wheel House" (water wheel on this plane when it was installed in 1843; dotted line indication of raceway to water supply for wheel) is shown. Foot of this plane below the point where the Light and Loaded tracks crossed. The flag stop on the Loaded track is just to the west of the crossing of the two tracks.


Railroad bridge on Level 15 over the turnpike road
Railroad bridge over Van Auken Brook
Raceway from Van Auken Brook to supply water for wheel at Plane No. 16
"Old [Water] Wheel House" at the foot of Plane No. 16, 1843
Foot of Plane No. 16
Loaded track crossing of light track in the middle of Plane No. 16
No. 16 was a flag stop on the loaded track.
TURNPIKE
Reuben Carr
Mathew Watt
W F Hurlburt
E.&J. Quinlan
No 16

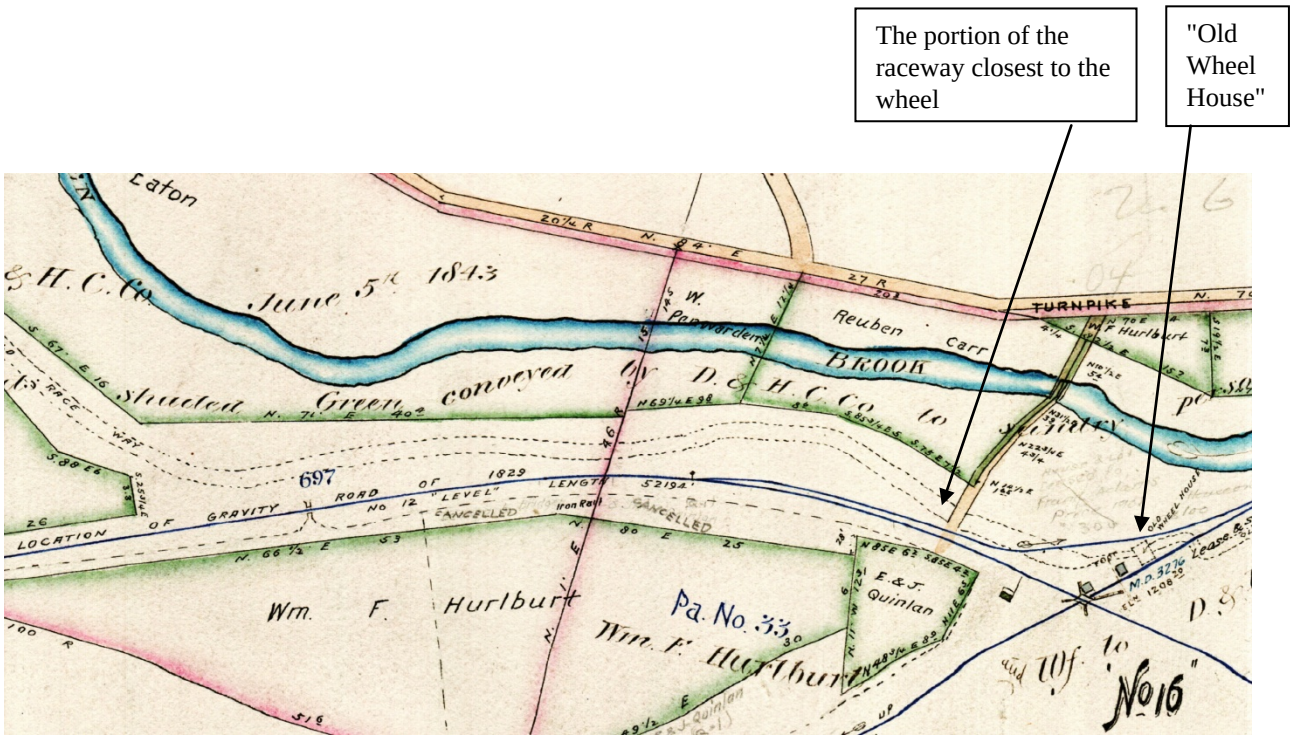
Head, No. 16: 1895 Gravity Railroad map volume. Shown in blue is the original location of the Gravity line through this area in 1829.



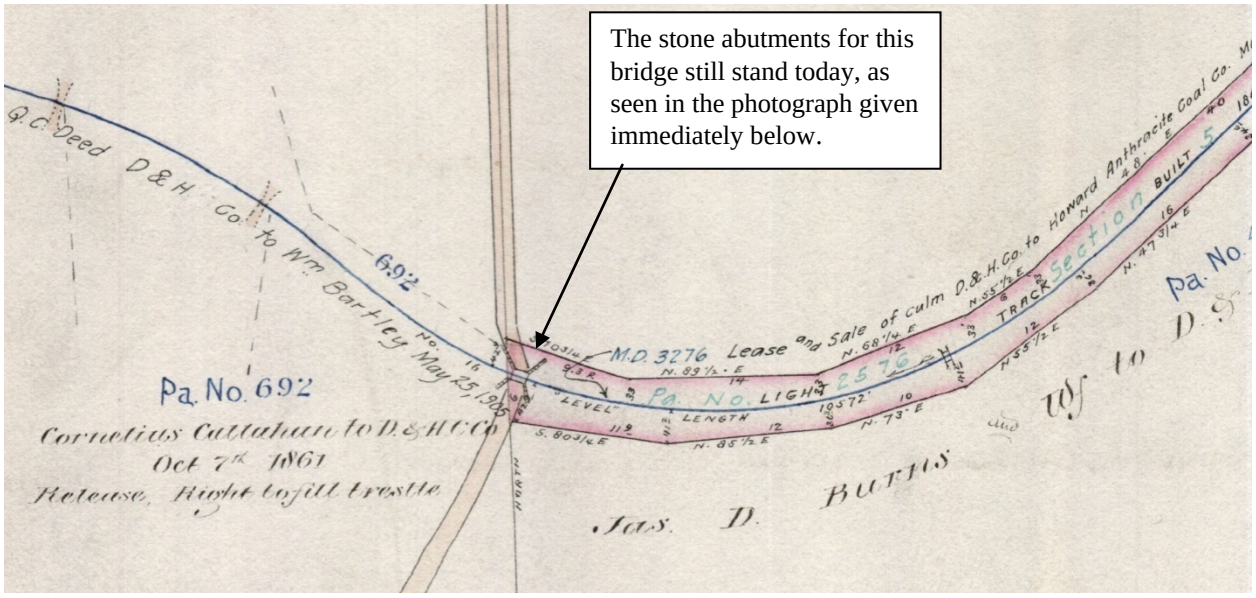
The beginning of the raceway was a considerable distance up stream from the wheel.



The original Gravity road through this section became Level 12 in 1868.


The portion of the raceway closest to the wheel
"Old Wheel House"
Eaton
June 5th 1843
Reuben Carr
BROOK
Wm. F. Hurlburt
Pa. No. 33
E. & J. Quinlan
No16
TURNPIKE
LOCATION OF GRAVITY ROAD OF 1829
"LEVEL"
CANCELLED
697

Bridge foundation/culvert on Level 16, from 1895 Gravity Railroad map volume:



Given below are two photographs taken by the author that was taken in October 2011 of the bridge/culvert abutment that supported a portion of Level 16 on its way to the foot of No. 17, to the west of Keen's Pond. The wagon road passed under the light track here, passing between the two abutments.

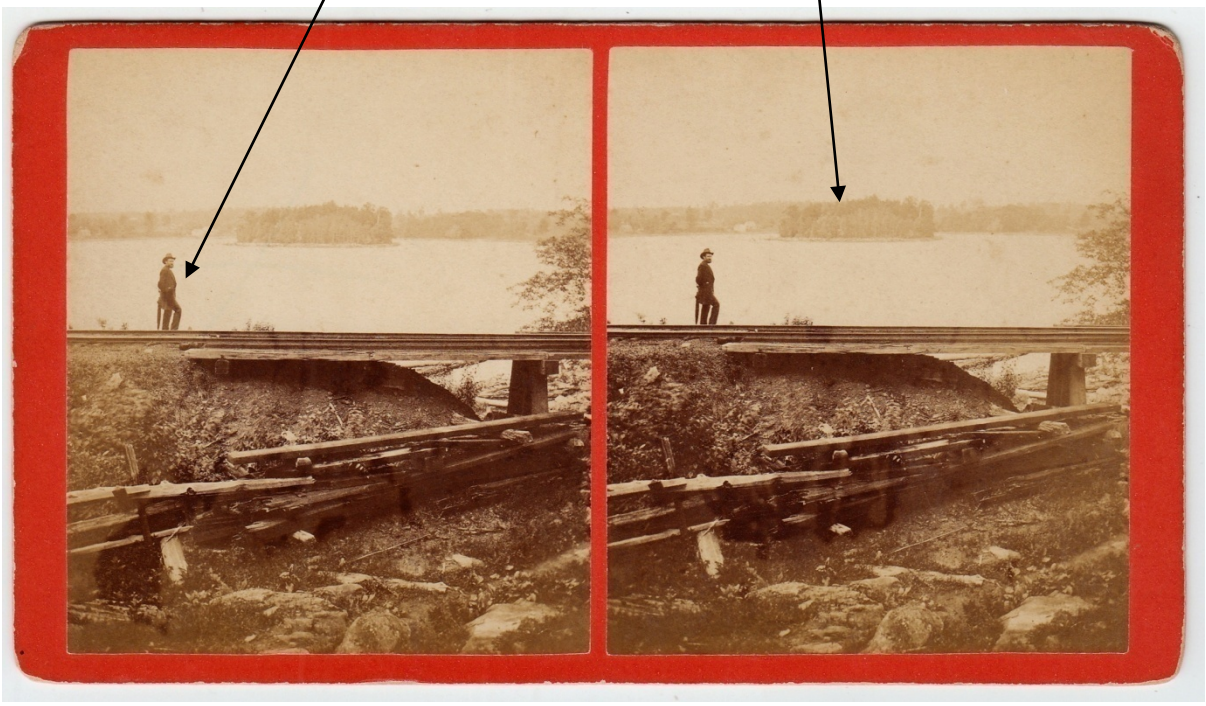
Hensel stereocard No. 1110-1111: two different views:

Hensel No. 1110-1111: *Island on Keen's Lake, seen from Light Track*

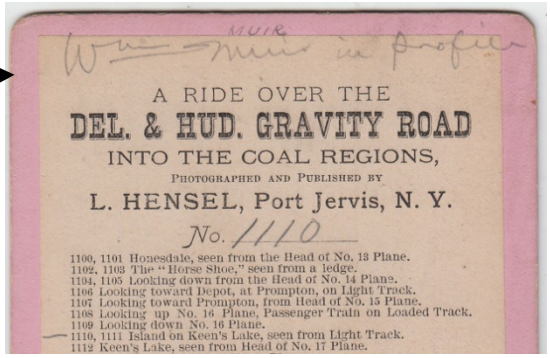
The loaded track passed by Keene's Pond on the Route 6 side of the Pond; the light track went up to Waymart on the back side of Keene's Pond; on the reverse of this card, the following notation about the identity of the person shown in this card, is given: "Wm Muir in profile". This section of the Light track was Level 16.

William Muir, who was the Superintendent of Engines from Honesdale to Waymart in 1874, accompanied Hensel on his photographic tour of the Gravity Railroad in this section.

The island in Keen's Pond

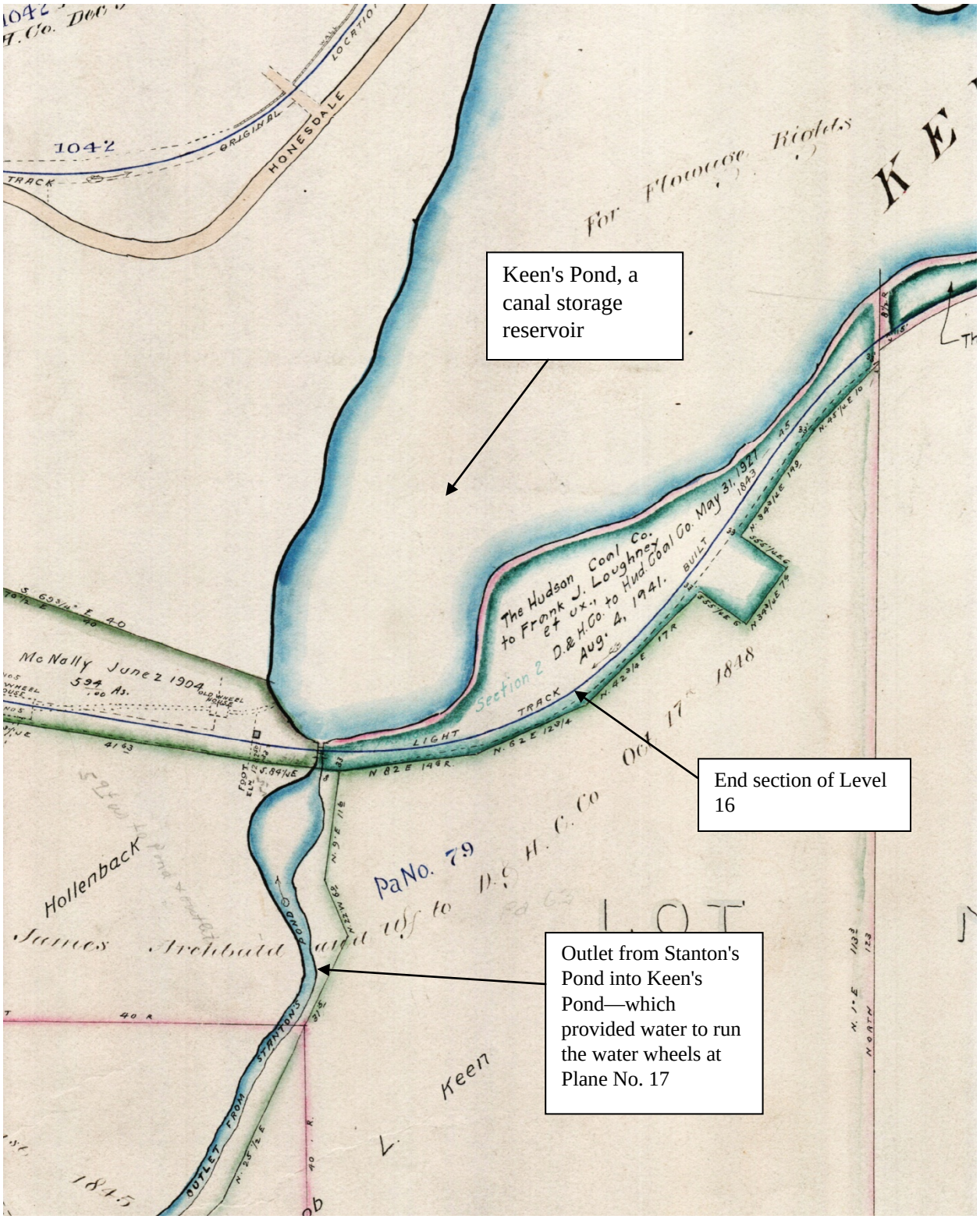


"Wm Muir in profile"; this is a detail of the back of the photo given immediately above.



Given below is the second view of the Island on Keen's Lake as seen from the Light track. Hensel No. 1110-1111: *Island on Keen's Lake, seen from Light Track*

The end of Level 16, at the back of Keen's Pond, at the foot of Plane No. 17, as seen on the 1895 Gravity Railroad map volume, is shown below:



6008

Plane No. 17

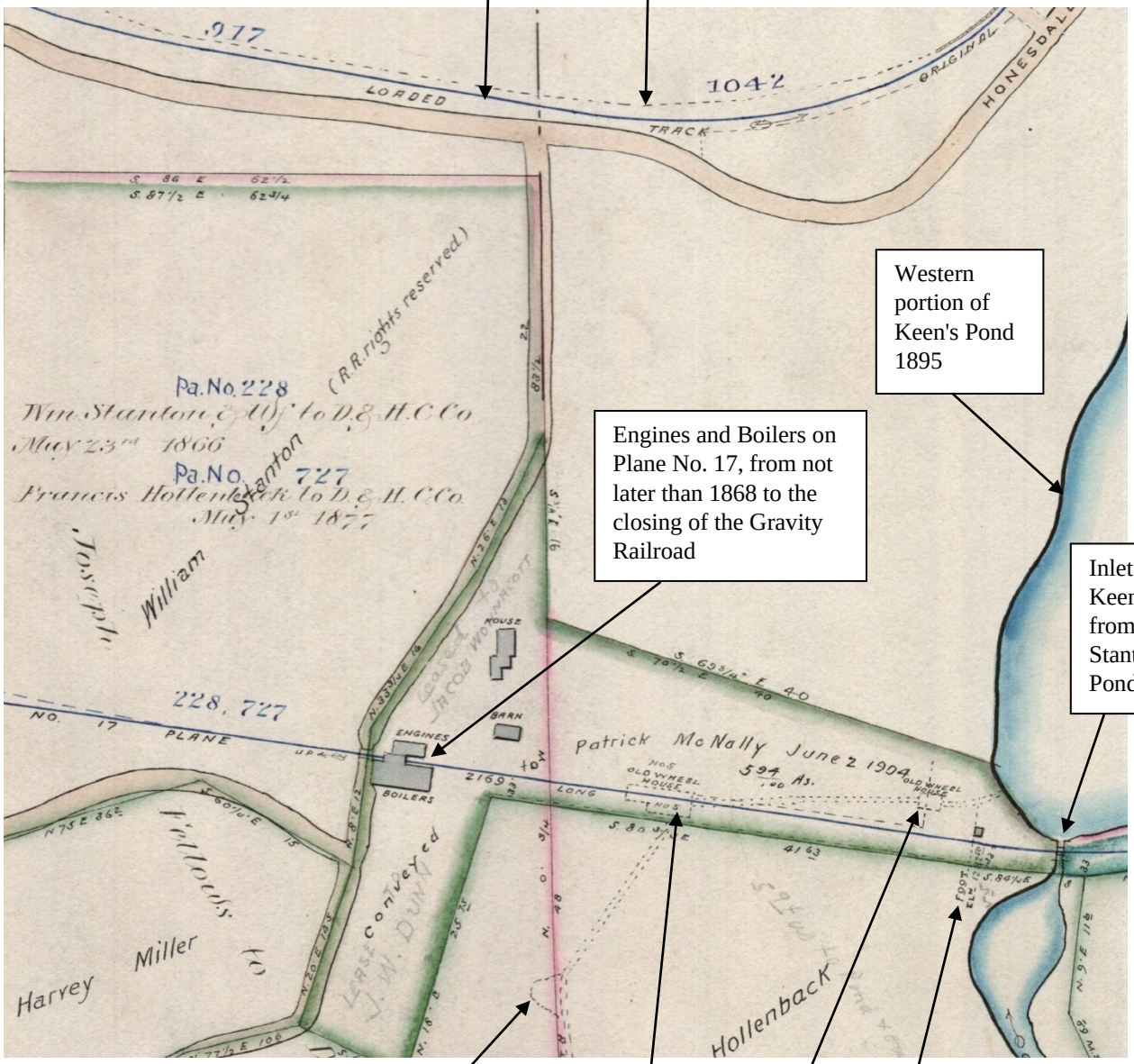
-- Plane: 2,169 feet long (rise 185.70 feet)

--Level: 6,869 feet long (fall 54. 76 feet)

1895 Gravity Railroad map detail:

The foot of Plane No. 17 (a short distance west of the Western edge of Keen’s Pond--where the outlet of Stanton Pond flows into Keen’s Pond); the engine/boiler house on Plane No. 17, and portions of Plane No. 17, both above and below the engine/boiler house, are shown on this map. Also shown on this map is the location of "No. 5 Old Wheel House" and the raceway—dotted lines—from Keen’s Pond to supply water for the wheel. Plane No. 17, which was the 5th plane on the light track out of Honesdale, is usually referred to by folks form Honesdale as "Plane No. 5." From 1843 to 1846 this plane was powered by a stationary steam engine. From 1846 up to not later than 1868, it was powered by two waterwheels. From not later than 1868 up to the closing of the Gravity Railroad, it was again powered by a stationary steam engine.

The loaded track, 1895, through the Keen's Pond area was more or less on the same roadbed as the Six-mile Level in the 1829 configuration (dotted line) of the road.



Western portion of Keen's Pond 1895

Engines and Boilers on Plane No. 17, from not later than 1868 to the closing of the Gravity Railroad

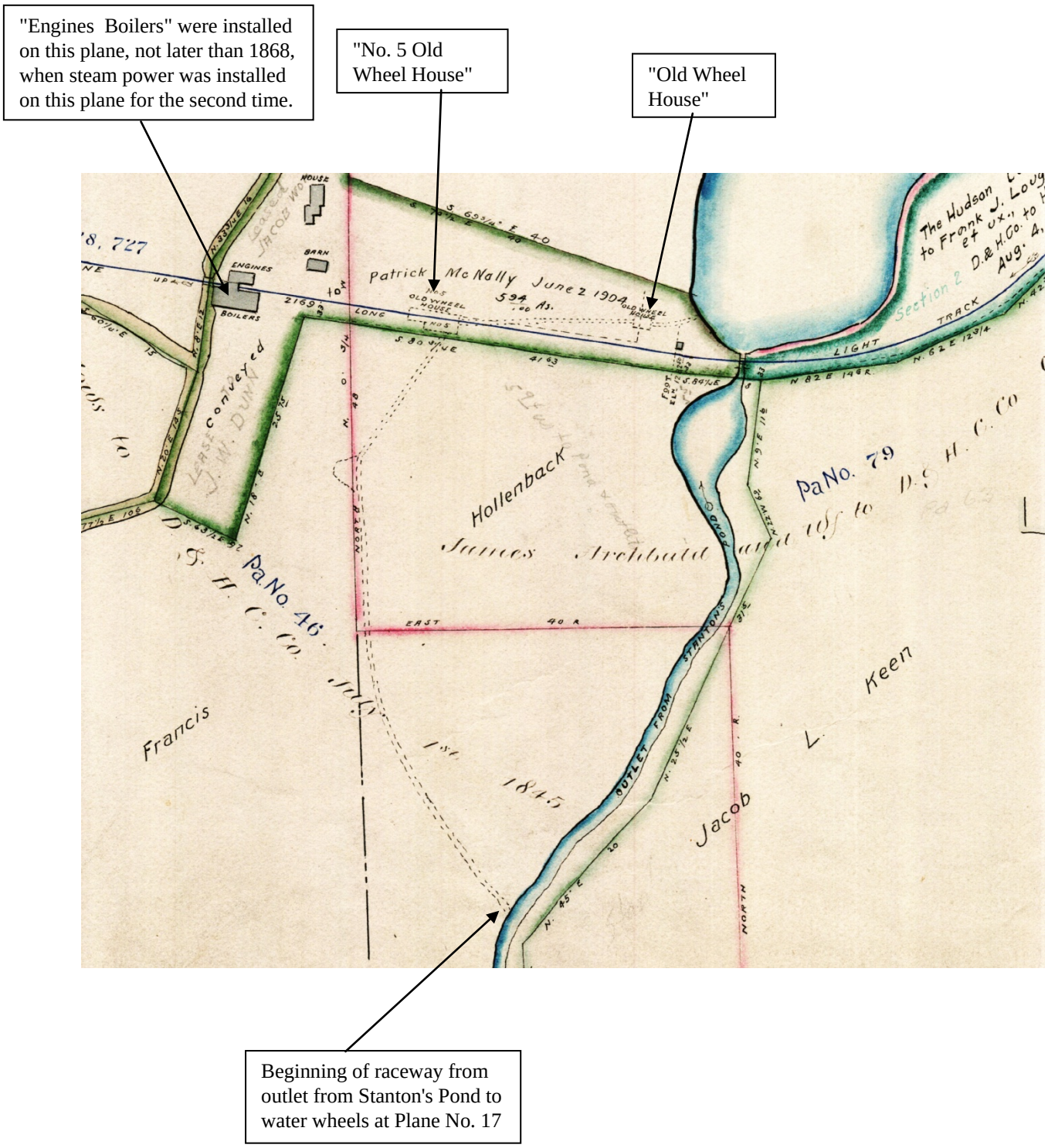
Inlet to Keen's Pond from Stanton's Pond

Raceway from Stanton's Pond to provide water for wheels at Plane No. 17

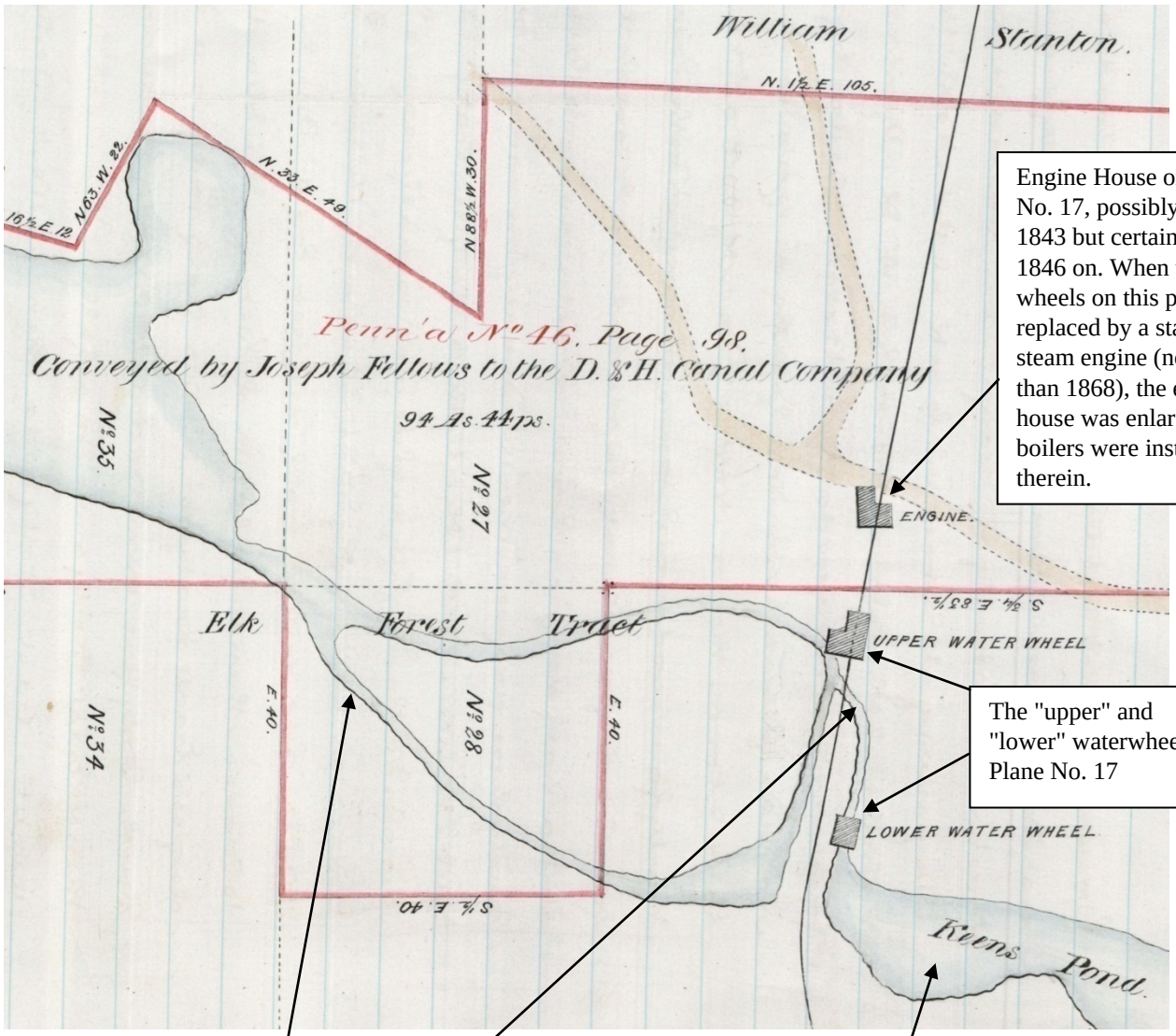
"No. 5 OLD WHEEL HOUSE" and "OLD WHEEL HOUSE" at Plane No. 17

Foot of Plane No. 17, possibly from 1843 on, but certainly from not later than 1868 to the closing of the Gravity Railroad

Another view, showing the complete raceway from the outlet from Stanton's Pond to the water wheels at Plane No. 17.



The area at the foot of Plane 17 is also shown on the map that illustrates the deed, dated July 1, 1845, between Joseph Fellows and The Delaware and Hudson Canal Company. The deed is in the *D&H Deed Book, PA*, p. 27; the map is on page 28. Given below is the relevant portion of that map. Note that there are two water wheels here, Upper Water Wheel and Lower Water Wheel. The Engine House, located about one thousand three hundred feet below the head of the plane (roughly around the middle of the plane), is directly above the Upper Water Wheel.



Engine House on Plane No. 17, possibly from 1843 but certainly from 1846 on. When the water wheels on this plane were replaced by a stationary steam engine (not later than 1868), the engine house was enlarged and boilers were installed therein.

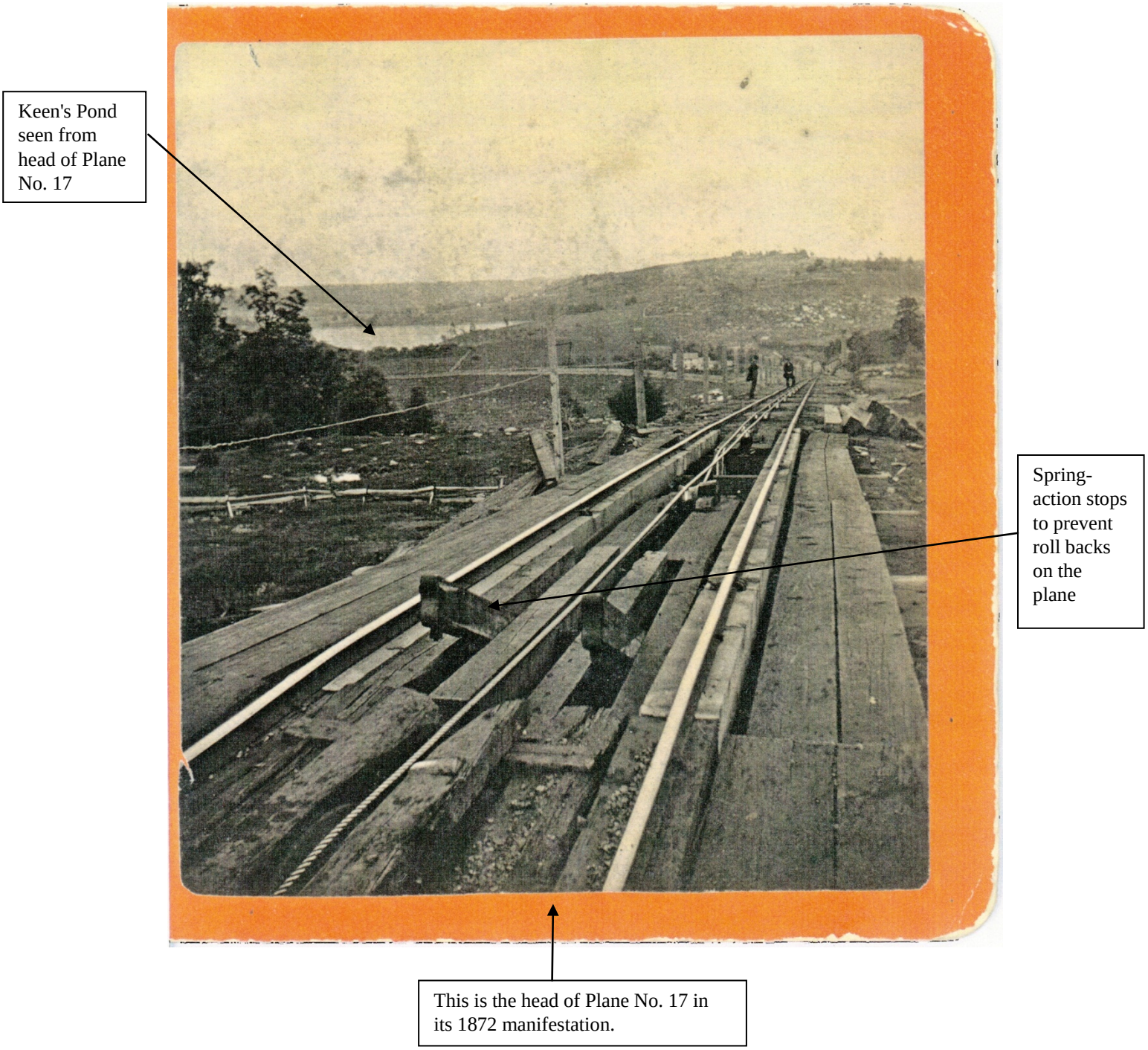
The "upper" and "lower" waterwheels on Plane No. 17

Raceway to power the wheels at Plane No. 17

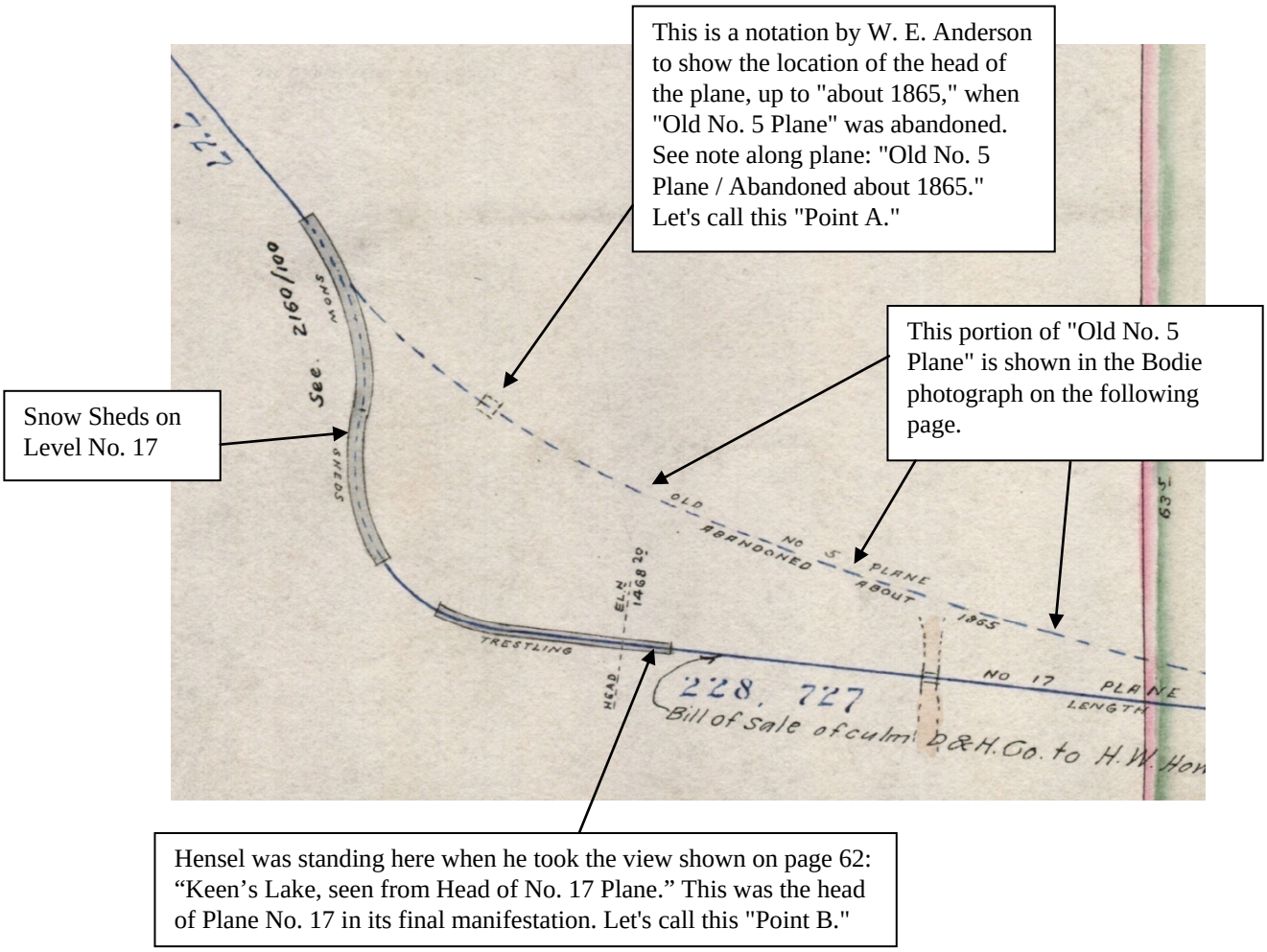
Keen's Pond

Hensel, No. 1112: “Keen’s Lake, seen from Head of No. 17 Plane”

Shown here is an electronic scan of a paper copy from one-half of an original of the stereocard; paper copy in the collection of the Minisink Valley Historical Society.



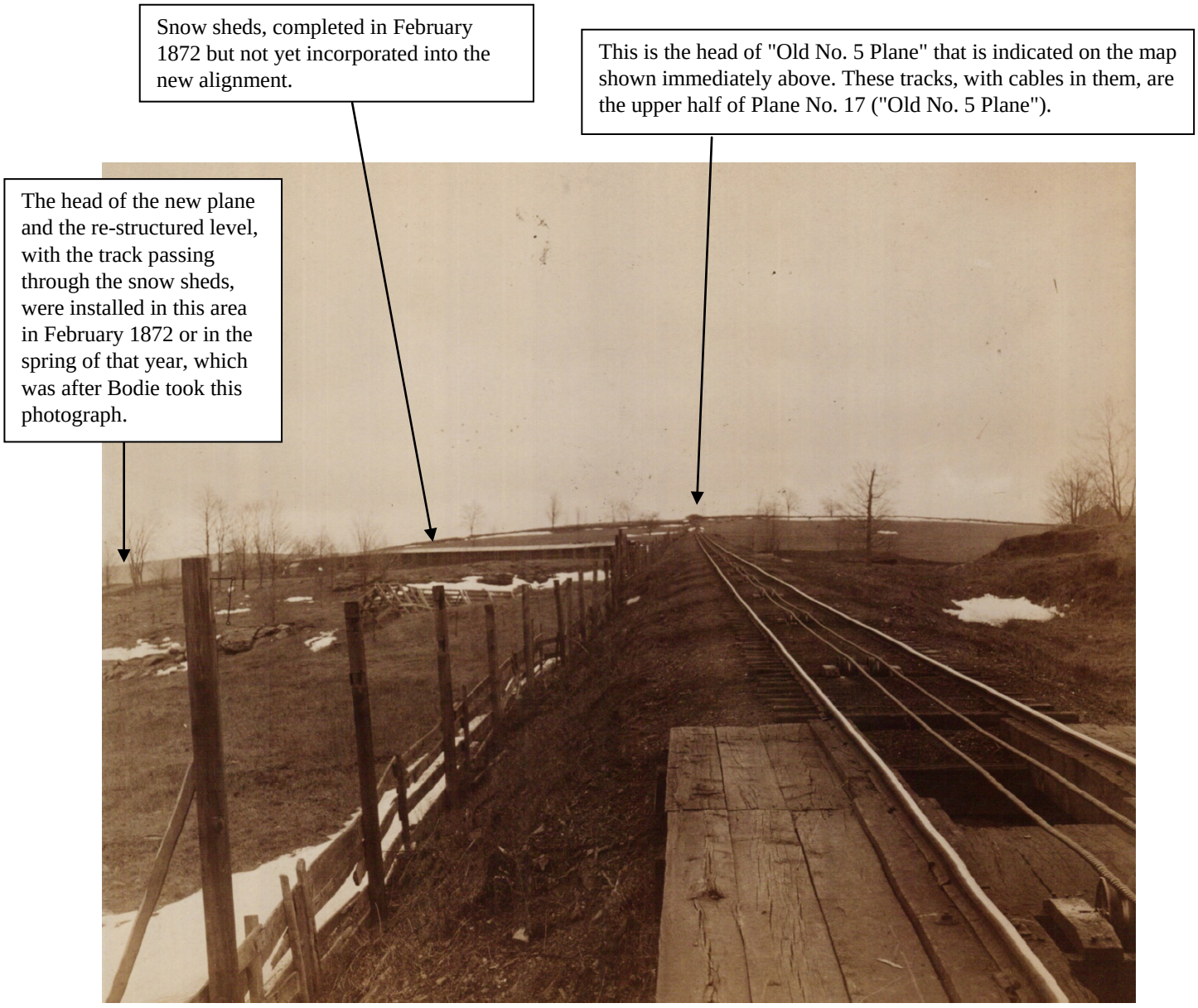
Head of Plane No. 17, as seen in the 1895 Gravity Railroad map volume.



Snow sheds on Level No. 17. These were the only snow sheds on the D&H Gravity Railroad. They were completed in February 1872. This we know from a notice that was published in the February 9, 1872 issue of the *Wayne County Democrat:* "The Del. and Hud Co. has completed large and extensive snow sheds below plane No. 17. It will save many days hard shoveling during heavy snow storms." Given the fact that the snow sheds were completed in February 1872, the head of Plane No. 17 was, in all probability, moved from "Point A" to "Point B" at that time or in the spring of 1872. "About 1865" in W. E. Anderson's note on this map about the abandonment of Old No. 5 can, therefore, thanks to the above notice in the *Wayne County Democrat* be clarified, and understood (in our humble opinion) to mean "1872."

Given below is a photograph by J. A. Bodie, titled "Upper Half of Plane No. 17"; photo in the collection of the Wayne County Historical Society.

This photograph is a view of the "Upper Half of Plane No. 17" (called "Old No 5 Plane" on the map on page 63). This photograph was taken before the head of Plane No. 17 was moved from "Point A" to "Point B," which took place, it is our contention, in February 1872 or in the spring of that year. "In this photograph we see not only the portion of "Old No. 5" above the engine house, but also the snow sheds before the plane was moved to the left and before the sheds were incorporated into the new alignment.



In 1872 the head of Plane No. 17 was moved from what we've identified on page 63 as Point A to Point B—which means that from 1872 on Plane No.17 was shorter and that Level No.17 was longer than previously.

When the new level and the snow sheds were incorporated into the system in 1872, the new head of Plane No. 17 was elevated appropriately so that the cars would roll down Level 17 (6,689 feet long), passing through the snow sheds and then on into Waymart.

The 1872 head of Plane No. 17 is shown here in Hensel stereocard No. 1113: *The Angle at Head of No. 17 Plane:*

Once the empty cars were returned to the foot of Plane No. 17 in Waymart, they were worked back through the system to Carbondale and the Lackawanna Valley through the planes on the Moosic Mountain.

6009

Waterwheels in Carbondale and Archbald

In addition to the waterwheels on the light track between Honesdale and Carbondale, there were waterwheels on Planes No. 1 and 28 in downtown Carbondale, and on Plane No. 21 in Archbald, and we will now have a look at the wheels on those three planes.

The question of waterwheels and waterpower on the Gravity Railroad in downtown Carbondale was raised initially in 1902 when, following the close of the Gravity Railroad and the removal, by the D&H bridge builders, of the "highworks" (Level No. 28 between the head of Plane No. 28 and the foot of Plane No. 1), workers discovered, as they were removing the abutments which supported those highworks and formed a wall for the embankment of culm, a giant waterwheel that had been buried on the site where the D&H coal pockets at the foot of Salem Avenue would at that time be erected.

The discovery of this buried water wheel resulted in eight articles in Carbondale newspapers about the buried water wheel. These eight clippings were grouped together in one of the Gritman scrapbooks in the collection of the Carbondale Historical Society.

Here are those eight clippings from the Gritman scrapbook:

(1) *Carbondale Leader,* January 29, 1902:

"WORKMEN UNEARTH OLD WATERWHEEL. / *No One Found Who Can Tell of Its Use—The D. & H. Improvements on River Street.* / The Delaware & Hudson gang of bridge builders have completed the job of removing the trestling which spanned Dundaff street at the foot of Salem avenue, and workmen are now engaged in tearing down the heavy abutments which supported the bridge and formed a wall for the embankment of culm. / In excavating for the foundation of the massive coal storage tank which is to be erected the workmen unearthed an old water wheel of very large proportions. It is made of oak and pine and the lumber in the wheel and framework were found to be in an excellent state of preservation notwithstanding the many years they have practically been immersed for the wheel was found below the level of the river bed and the earth thereabouts is thoroughly saturated with water. /So far no one has been found who knows anything about the water wheel. None of those who have seen it so far have the least recollection of what is was used for. / The work on the improvements being made there is progressing very rapidly. The foundation for the new tank is well under way. Owing to the condition of the soil, the pumps have to be kept going night and day to keep the hole clear from water. / The company is also making extensive changes west of the railroad. The old canal bank has been cut down and a strip of land extending from the Hendrick oil works to the city station has been graded for tracks. This will be used as additional yard room, of which the company is

badly in need. / The residents of that vicinity were in hopes that the company would also remove the embankment between Dundaff street and the river on Salem avenue. From the outlook this will not be done at once, but it is said other important changes are to be made this summer which will greatly improve that section." *(Leader,* January 29, 1902)

What have we learned:

- The water wheel, made of oak and pine, was very large. The wheel was below the level of the Lackawanna River and, being saturated with water, was well preserved.

- No one has been found who knows anything about the water wheel. None of those who have seen it so far have the least recollection of what is was used for.

- The D&H is making extensive changes west of the railroad. The old canal bank has been cut down and a strip of land extending from the Hendrick oil works to the city station has been graded for tracks. This will be used as additional yard room, of which the company is badly in need.

(2) *Carbondale Leader,* January 31, 1902:

“I think I can account for the old water wheel found in the excavation at the foot of Salem avenue. It is undoubtedly the wheel that was used for some time in the early fifties to draw the cars up the slope in what was called the 'new' mine that was located near that point."—A Gillies, Sr. *(Leader,* Friday, January 31, 1902)

What have we learned:

- Alexander Gillies, Sr. reports that the old water wheel "is undoubtedly the wheel that was used for some time in the early fifties [the 1850s] to draw the cars up the slope in what was called the 'new' mine that was located near that point."

(3) *Carbondale Leader,* February 1, 1902:

“The interview with Alexander Gillies, Sr., in yesterday’s *Leader* concerning the old water wheel which was unearthed at the foot of Salem avenue, has brought out other suggestions as to what the wheel might have been originally used for. A lady whose recollection runs well back into the forties said today that it might be the wheel put up by the Delaware & Hudson in the early days to draw the cars up No. 1 plane. It was a mammoth wheel that made a great noise when it revolved and as its operation was not steady it was soon abandoned. It was to run this wheel that the reservoir on what was known as No. 1 hill was erected." *(Leader,* February 1, 1902)

What have we learned:

- Alexander Gillies's suggestions as to the original use of the buried water wheel in the 1850s causes a lady to think back to the 1840s when, said she, the wheel "might be the wheel put up by the Delaware & Hudson in the early days to draw the cars up No. 1 plane. It was a mammoth wheel that made a great noise when it revolved and as its operation was not steady it was soon abandoned. It was to run this wheel that the reservoir on what was known as No. 1 hill was erected."

(4) *Carbondale Leader:* February 1, 1902:

“The cars were never drawn up No. 1 plane by water power according to my recollection; and that goes back to a very early period. Whitman Brown was the engineer at the head of that plane as early as 1833." C. E. Lathrop *(Leader,* February 1, 1902)

What have we learned:

- C. E. Lathrop reports that "the cars were never drawn up No. 1 plane by water power."

- Whitman Brown was the engineer at the head of Plane No. 1 as early as 1833.

(5) *Carbondale Leader*, February 5, 1902:

"ONE-MINUE INTERVIEWS.

"I see by the One-Minute Interviews that no water wheel was used to draw cars on the Gravity. My recollection is that one was used to draw cars up No. 1 plane about the year 1850. It did not give good satisfaction and was in use for but a short time. One of the principal reasons the reservoir was constructed was to furnish water for this wheel, which, if I remember rightly, was nearly seventy feet in diameter." T. B. Vannan. *(Leader,* Wednesday, February 5, 1902)

What have we learned:

- T. B. Vannan reports that a water wheel was used to draw cars up Plane No. 1 in about 1850. The wheel "did not give good satisfaction and was in use for but a short time. One of the principal reasons the reservoir was constructed was to furnish water for this wheel, which, if I remember rightly, was nearly seventy feet in diameter."

(6) *Carbondale Leader,* February 5, 1902:

"I remember the old water wheel that used to be at No. 1 plane and was inquiring about it when in Carbondale in September." James Archbald, Scranton." *(Leader,* Wednesday, February 5, 1902)

What have we learned:

- James Archbald, writing from Scranton to the *Carbondale Leader,* remembered the old water wheel that used to be at No. 1 plane and "was inquiring about it when in Carbondale in September."

(7) *Carbondale Leader,* February 8, 1902

"A BUILDER SPEAKS ABOUT THE WHEELS. / William Johnson, Sr., Gives a Full History of the Water Wheels in Use on the Old Gravity. / The discussion about the old Gravity railroad water wheels which has been going on in the *Leader* several days as a result of the discovery of the old wheel pit on the plot at the foot of Salem avenue, has caused no little interest among the older residents of the town and has started afresh the stream of reminiscences. In the discussion so far there seems to have been a considerable degree of uncertainty as to the exact location of the wheels and also their number and the years in which they were in use. For this reason the *Leader* takes great pleasure in presenting to its readers today the views of William Johnson, Sr., of Washington place, on the question. As he was one of the men engaged in erecting the wheels under special discussion he is a well qualified authority on the matter. Mr. Johnson entered the employ of the Delaware & Hudson company in the spring of 1844 and having been with them constantly since is, perhaps, better qualified than any other man to recount the changes which have taken place on the Gravity road since then. /Mr. Johnson states that there were two water wheels located on the plot where the coal pockets are to stand. They were constructed in 1853 and were made necessary by the construction of two planes where formerly there was but one. The first water wheel in use on the old gravity was located near the head of the old No. 28 plane. At first it did its work very well but later, when the business had largely increased, it was decided to divide this plane and another wheel was constructed at the new head of the old plane which stood near the present Mills & Baker property. This change was made in the year 1853, Charles P. Wurts was at that time superintendent of the company, he having come here in 1851. James Dickson was master mechanic and William Ball, then superintendent of machinery, had charge of the work of constructing the wheels. / Previous to 1853 there was a level extending from the head of the old No. 28 plane to the foot of No. 1. Across this the cars were pulled by horses. The head of No. 28 was then some feet lower than it now is and the foot of No. 1 somewhat higher. On the plot at the foot of Salem avenue was a fine spring to which people went from all sections

for water. John W. Aitken, father of the present John Aitken, at one time made a pond there and put over a thousand trout in it, but the boys soon caught these. In 1853 when the change was made the head of the second plane was near where the present local coal pockets stand, midway between No. 28 and No. 1 planes. To pull the cars up this plane a water wheel was constructed at its foot, where the old wheel pit was recently discovered. This wheel was fifteen feet in diameter and ten feet abreast and was made of heavy oak and pine. It was run with an overshot current taken from the Lackawanna river. There was plenty of water but a sufficient fall could not be obtained so a second wheel, slightly smaller, was constructed and geared to the first one. There was more than enough water in the current to fill the buckets of the big wheel and the surplus was used to run the second one. In this way plenty of power was secured to whisk the cars up the plane at a lively rate. The same stream was used to run a third wheel located about 300 feet north of the two mentioned. This was used to draw the coal cars up from the old mine, the opening to which may still be seen in the base of the west side bluff. / The cars were drawn up No. 1 plane originally by a big upright stationery engine. In 1845 this was displaced by a pair of horizontal engines. In the same year a fifty foot water wheel was constructed. It was used only in the spring and fall when there was lots of water, which was taken from the old Durfee saw mill pond. This wheel did not last very long, as in the dry seasons when it was not in use it would dry out and soon feel to pieces. It was, however, a very powerful wheel when there was sufficient water for power. The wheel at the Mills & Baker property was run by Patrick Lunney, of South Main street; those at the foot of the second plane by the late Hugh Gillen and the one at No. 1 plane by the late Eulis Campbell. In 1856 Mr. Wurts made other extensive changes. Instead of five planes as formerly eight were used and the level stretches between were graded so as to do away with the use of horses. Before that time, also, both light and loaded planes had to be used at the one time, the loaded cars being hoisted by power while the empty ones carried the tail rope to the foot. In this year the endless wire ropes were substituted for the old hempen ones. / In 1858 the route of the mountain road was again changed and new engines were put in use. In 1859 the water wheels in this city were abandoned and a pair of the engines displaced by the changes on the mountain road in the year previous were utilized for power on No. 28 plane. The short plane between No. 28 and No. 1 was done away with and a trestling constructed across the town between the two. Shortly after the 'high works' were erected some gravel cars broke through and fell down upon Dundaff street. Henry Peck was buried in the debris and, although he was not rescued for a considerable time, he escaped serious injury. In 1864 the light track was changed to the route followed in more recent years. When the old highworks were filled in and the new trestling was constructed–as seen by the present generation—the wheel pit was covered with the gravel, and thus hidden, was forgotten until its recent discovery by the workmen engaged on the new coal yard. / Mr. Johnson also tells some interesting tales of the early days of the town. Among other things he helped to construct was the first breaker in the city, and, indeed, on this side of the Moosic. Previous to 1851, all of the coal dug in the Delaware & Hudson mines was taken to Honesdale where it was prepared for market in the company's crude and only breaker. In that year, however, the apparatus was moved to this city and a new breaker erected on the plot where the present local coal pockets now stand. The only process the coal was put through was to crush it between rollers—of which there were three sets in the breaker—and only a small

portion of the quantity mined was subjected to this treatment, as most of it was sent to the market as mined, that is in lump form. These crushers did not break it in the clean manner the modern rollers do and from the coal thus treated there was a very large percentage of culm and pieces too small for sale in those days. In this way much of what would now be considered excellent fuel was lost. / An idea of the early output of the company may be gained from the amount of traffic on the Gravity. In the year in which Mr. Johnson went to work for the company, 1844, a day's quota on the Gravity consisted of eighty-three trips of four cars to a trip each car having a capacity of three tons. In other words 996 tons of coal were hauled over the road in a day and this was the entire output of the company's mines. In order to accomplish even this the road had to work from early morning till late at night. Since then output has increased enormously each succeeding year until recently and the railway facilities have been improved accordingly. To the old timers who were connected with the company or watched its early development the many changes on the road have been a matter of no small interest." *(Carbondale Leader,* Saturday, February 8, 1902)

What have we learned:

- William Johnson, of Washington Place, Carbondale, contacts the *Leader* to state that he was one of the men who installed the water wheels in question and is therefore a well qualified authority on the matter. William Johnson began working for the D&H in 1844 and is still working for the D&H.

- "Mr. Johnson states that there were two water wheels located on the plot where the coal pockets are to stand. They were constructed in 1853 and were made necessary by the construction of two planes where formerly there was but one."

- WJ: "The first water wheel in use on the old gravity was located near the head of the old No. 28 plane. At first it did its work very well but later, when the business had largely increased, it was decided to divide this plane and another wheel was constructed at the new head of the old plane which stood near the present Mills & Baker property. This change was made in the year 1853, Charles P. Wurts was at that time superintendent of the company, he having come here in 1851. James Dickson was master mechanic and William Ball, then superintendent of machinery, had charge of the work of constructing the wheels."

- WJ: "Previous to 1853 there was a level extending from the head of the old No. 28 plane to the foot of No. 1. Across this the cars were pulled by horses. The head of No. 28 was then some feet lower than it now is and the foot of No. 1 somewhat higher. On the plot at the foot of Salem avenue was a fine spring to which people went from all sections for water. John W. Aitken, father of the present John Aitken, at one time made a pond there and put over a thousand trout in it, but the boys soon caught these. In 1853 when the

change was made the head of the second plane was near where the present local coal pockets stand, midway between No. 28 and No. 1 planes. To pull the cars up this plane a water wheel was constructed at its foot, where the old wheel pit was recently discovered. This wheel was fifteen feet in diameter and ten feet abreast and was made of heavy oak and pine. It was run with an overshot current taken from the Lackawanna river. There was plenty of water but a sufficient fall could not be obtained so a second wheel, slightly smaller, was constructed and geared to the first one. There was more than enough water in the current to fill the buckets of the big wheel and the surplus was used to run the second one. In this way plenty of power was secured to whisk the cars up the plane at a lively rate. The same stream was used to run a third wheel located about 300 feet north of the two mentioned. This was used to draw the coal cars up from the old mine, the opening to which may still be seen in the base of the west side bluff."

- WJ: "The cars were drawn up No. 1 plane originally by a big upright stationery engine. In 1845 this was displaced by a pair of horizontal engines. In the same year a fifty foot water wheel was constructed. It was used only in the spring and fall when there was lots of water, which was taken from the old Durfee saw mill pond. This wheel did not last very long, as in the dry seasons when it was not in use it would dry out and soon feel to pieces. It was, however, a very powerful wheel when there was sufficient water for power."

- WJ: "The wheel at the Mills & Baker property was run by Patrick Lunney, of South Main street; those at the foot of the second plane by the late Hugh Gillen and the one at No. 1 plane by the late Eulis Campbell."

- WJ: "In 1859 the water wheels in this city were abandoned and a pair of the engines displaced by the changes on the mountain road in the year previous were utilized for power on No. 28 plane. The short plane between No. 28 and No. 1 was done away with and a trestling constructed across the town between the two."

- WJ: "When the old highworks were filled in and the new trestling was constructed–as seen by the present generation—the wheel pit was covered with the gravel, and thus hidden, was forgotten until its recent discovery by the workmen engaged on the new coal yard."

- William Johnson helped to construct "the first breaker in the city, and, indeed, on this side of the Moosic. Previous to 1851, all of the coal dug in the Delaware & Hudson mines was taken to Honesdale where it was prepared for market in the company's crude and only breaker. In that year, however, the apparatus was moved to this city and a new breaker erected on the plot where the present local coal pockets now stand. The only process the coal was put through was to crush it between rollers—of which there were three sets in the breaker—and only a small portion of the quantity mined was subjected to this treatment, as most of it was sent to the market as mined, that is in lump form. These crushers did not break it in the clean manner the modern rollers do and from the coal thus treated there was a very large percentage of culm and pieces too small for sale in those days. In this way much of what would now be considered excellent fuel was lost."

- William Johnson reported that in 1844, the year in which he went to work for the D&H, "a day's quota on the Gravity consisted of eighty-three trips of four cars to a trip each car having a capacity of three tons. In other words 996 tons of coal were hauled over the road in a day and this was the entire output of the company's mines. In order to accomplish even this the road had to work from early morning till late at night."

(8) *Carbondale Leader,* February 13, 1902

"Say, reported, did you ever hear what became of that old No. 1 water wheel that you've been telling us so much about?" asked J. M. Alexander of a *Leader* man. The newsgatherer professed ignorance and inquired what Mr. Alexander knew of the wheel. "Well," he said, "I have a book case the material of which was a part of that wheel. It is made of good heavy oak and I think a great deal of it now. When Charles Wurts was going to leave town, I thought perhaps he might not want to take the case along, it was so heavy. That was about 1866, I had quite a number of books on hand and I asked Gus. Wurts to go to his uncle and see if he couldn't get the bookcase. He succeeded in doing so for $25, which I gladly gave, and the bookcase has been in my possession since." *(Carbondale Leader,* Thursday, February 13, 1902)

What have we learned:

- J. M. Alexander reported that he owned a book case that was made out of part of the waterwheel that used to stand at the head of Plane No. 1. "It is made of good heavy oak and I think a great deal of it now. When Charles Wurts was going to leave town, I thought perhaps he might not want to take the case along, it was so heavy. That was about 1866, I had quite a number of books on hand and I asked Gus. Wurts to go to his uncle and see if he couldn't get the bookcase. He succeeded in doing so for $25, which I gladly gave, and the bookcase has been in my possession since."

From that amazing sequence of articles we have learned facts that are in print nowhere else, facts which have enriched our understanding of the railroad and mining operations of the D&H in Carbondale in the 1840s, 1850s, and 1860s.

On the question of waterpower and waterwheels we have learned a great deal.

6010

Waterwheel on Plane No. 1

When the Gravity Railroad opened in 1829, there was a large upright stationary steam engine at the head of Plane No. 1. In 1845 that upright engine was replaced by a pair of horizontal engines and a fifty-foot water wheel, which was operated Eulis Campbell. This wheel was used only in the spring and fall of the year when there was an abundant supply of water available to power the wheel. This water was taken from the former Durfee saw mill pond on Canaan Street. James Archbald, writing to the *Carbondale Leader* in February 1902, remembered this water wheel at the head of Plane No. 1.

William Johnson: "The cars were drawn up No. 1 plane originally [1829] by a big upright stationary engine. In 1845 this was displaced by a pair of horizontal engines. In the same year a fifty foot water wheel was constructed. It was used only in the spring and fall when there was lots of water, which was taken from the old Durfee saw mill pond. This wheel did not last very long, as in the dry seasons when it was not in use it would dry out and soon feel to pieces. It was, however, a very powerful wheel when there was sufficient water for power."

T. B. Vannan reports that a water wheel was used to draw cars up Plane No. 1 in about 1850. The wheel "did not give good satisfaction and was in use for but a short time. One of the principal reasons the reservoir was constructed was to furnish water for this wheel, which, if I remember rightly, was nearly seventy feet in diameter." T. B. Vannan remembered that the water wheel on Plane No. 1 was "nearly seventy feet in diameter." William Johnson says the wheel was a fifty foot wheel. Given Johnson's first hand experience, it is safe to say that the wheel was a fifty-foot wheel. Vannan is not correct when he says that the reservoir was constructed to furnish waster for this wheel. William Johnson reports that that reservoir was the former Durfee saw mill pond (which may well have been enlarged by the D&H).

C. E. Lathrop's recollection that there was never water power on Plane No. 1 is not correct. His recollection that Whitman Brown was the engineer at the head of Plane No. 1 as early as 1833 is a valuable addition to this historical record of the plane. William Johnson reported that it was Eulis Campbell who operated the waterwheel at the head of Plane No. 1.

That there was a water wheel at the head of Plane No. 1 was recalled by the lady who contacted the *Carbondale Leader* in response to Alexander Gillie's recollection about water wheels. That lady, whose recollection ran well back into the 1840s, reported that the wheel that was unearthed

at the foot of Salem Avenue "might be the wheel put up by the Delaware & Hudson in the early days to draw the cars up No. 1 plane. It was a mammoth wheel that made a great noise when it revolved and as its operation was not steady it was soon abandoned. It was to run this wheel that the reservoir on what was known as No. 1 hill was erected." Yes. Interesting new facts about the wheel: it made a great noise when it revolved, its operation was not steady and it was soon abandoned. No, the reservoir on No. 1 hill not erected to run this wheel. That reservoir was formerly the Durfee saw mill pond (which may well have been enlarged by the D&H).

When the water wheel at the head of Plane No. 1 was no longer used, part of that wheel was used to make a book case that was owned by J. J. Alexander in 1902. About the bookcase, J. M. Alexander reported: "It is made of good heavy oak and I think a great deal of it now. When Charles Wurts was going to leave town, I thought perhaps he might not want to take the case along, it was so heavy. That was about 1866, I had quite a number of books on hand and I asked Gus. Wurts to go to his uncle and see if he couldn't get the bookcase. He succeeded in doing so for $25, which I gladly gave, and the bookcase has been in my possession since."

Note on Plane No. 1:
In a substantial article in the June and July issues of *The Delaware and Hudson Railroad Bulletin*, N. H. Hiller, Jr. says:

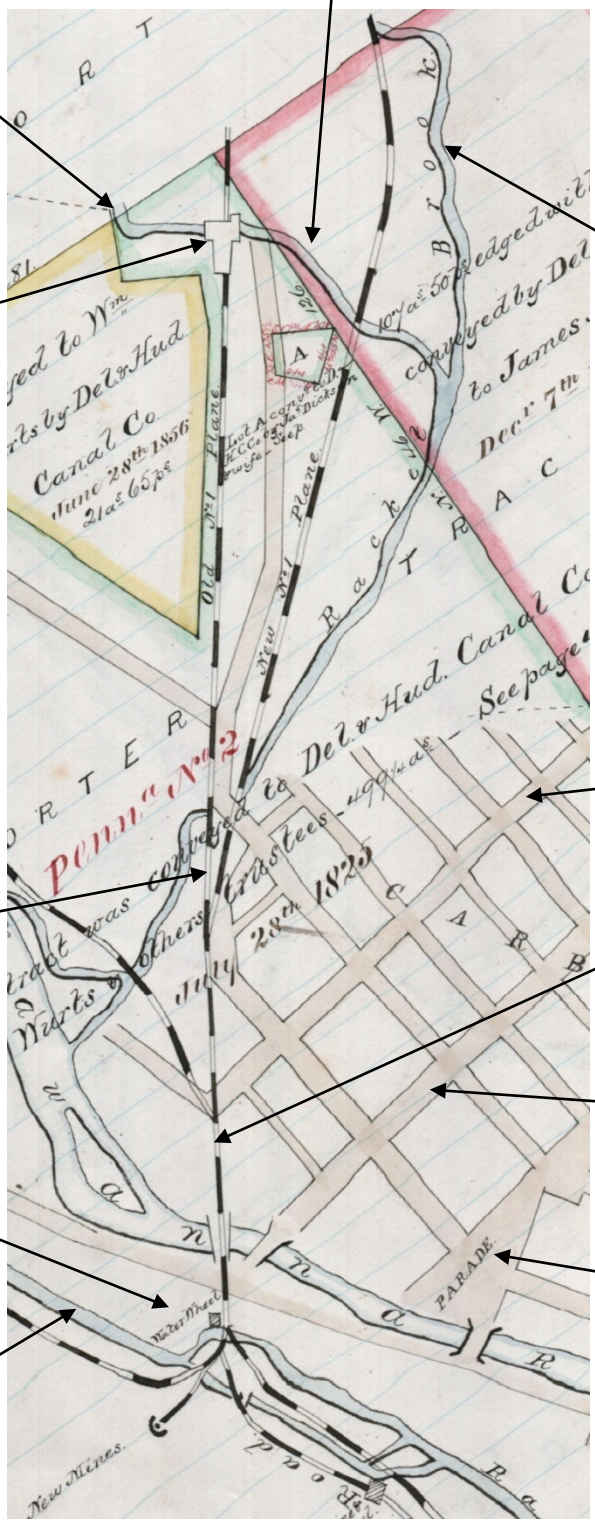
"At the foot of old Number One plane, records show that a fifty foot undershot water wheel was used for the first eighteen years [up to 1847] of the road's operation." (p. 181), ("Up Hill and Down Dale by Gravity Rail" by N. H. Hiller, Jr. *(The Delaware and Hudson Railroad Bulletin,* June 15, 1931, p. 181-182, 188-189); this article was concluded in the July 1, 1931 issue on pp. 196-198.

As far as we have been able to determine, there was never a 50-foot undershot water wheel at the foot of old Number One plane. One can't help but wonder what "records" Hiller was consulting when he learned of the existence of this waterwheel at the foot of No. 1 plane.

Given below is a detail from the map on page 12 in *D&H Deeds Luzerne I.* The map illustrates a deed, pp. 1-6, dated July 28, 1825, between John Wurtz & others, Trustees, and The Delaware & Hudson Canal Company. On this map, which contains details about several configurations of the Gravity Railroad, the location of the waterwheel at the head of Plane No. 1 is show. Here is that detail:

The water for the steam engine, from 1829 on, as well as the water to power the waterwheel that was installed here in 1845, came from the D&H reservoir at the top of Canaan Street. That reservoir was formerly the Durfee saw mill pond.

Note also that the excess water that flowed into the engine house flowed downgrade to re-join the Racket Brook at the bottom of the ravine.



The source of the Racket Brook was No. 4 Pond

Head of Plane No. 1, 1829: upright stationary steam engine in 1829, replaced in 1845 by a pair of horizontal steam engines and a 50-foot waterwheel. This waterwheel, said William Johnson, "did not last very long."

Present day Lincoln Avenue

Foot of Plane No. 1, from 1829 on

Level from the head of the plane from the mines to the foot of Plane No. 1

Water wheel that hoisted the cars from the mines nearly 80 feet in height. Once thus elevated, the cars rolled down the level to the foot of Plane No. 1.

Present day Salem Avenue

The Parade encompassed the entire area now occupied by Memorial Park and City Hall/the Library.

The canal that flowed through downtown Carbondale

In addition to the water wheel on Plane No. 1 (1845), there were also water wheels on Plane No. 28 in downtown Carbondale (1853-1859).

Before we look at the water wheels that were used on that plane, it is important that we learn about the source of the water that powered those wheels, as well as the waterwheel that powered the plane from the mines shown on the preceding page and several other wheels in downtown Carbondale (the three waterwheels on Plane No. 28, the wheel at the Carbondale Planing Mill, the wheel at the Mills & Baker property on South Main street; and no less than 3 D&H pump houses) was the Carbondale Canal.

6011

The Carbondale Canal

Given below are two details from the 1873 *D. G. Beers Luzerne County* map. Thereon we see the path of the Carbondale Canal through downtown Carbondale. This map was published in 1873, by which time all of the D&H waterwheels in downtown Carbondale had either been eliminated or replaced by stationary steam engines and are not, therefore, shown on this map. We show this map to orient the reader as to the locations of those waterwheels in the period 1853-1859.

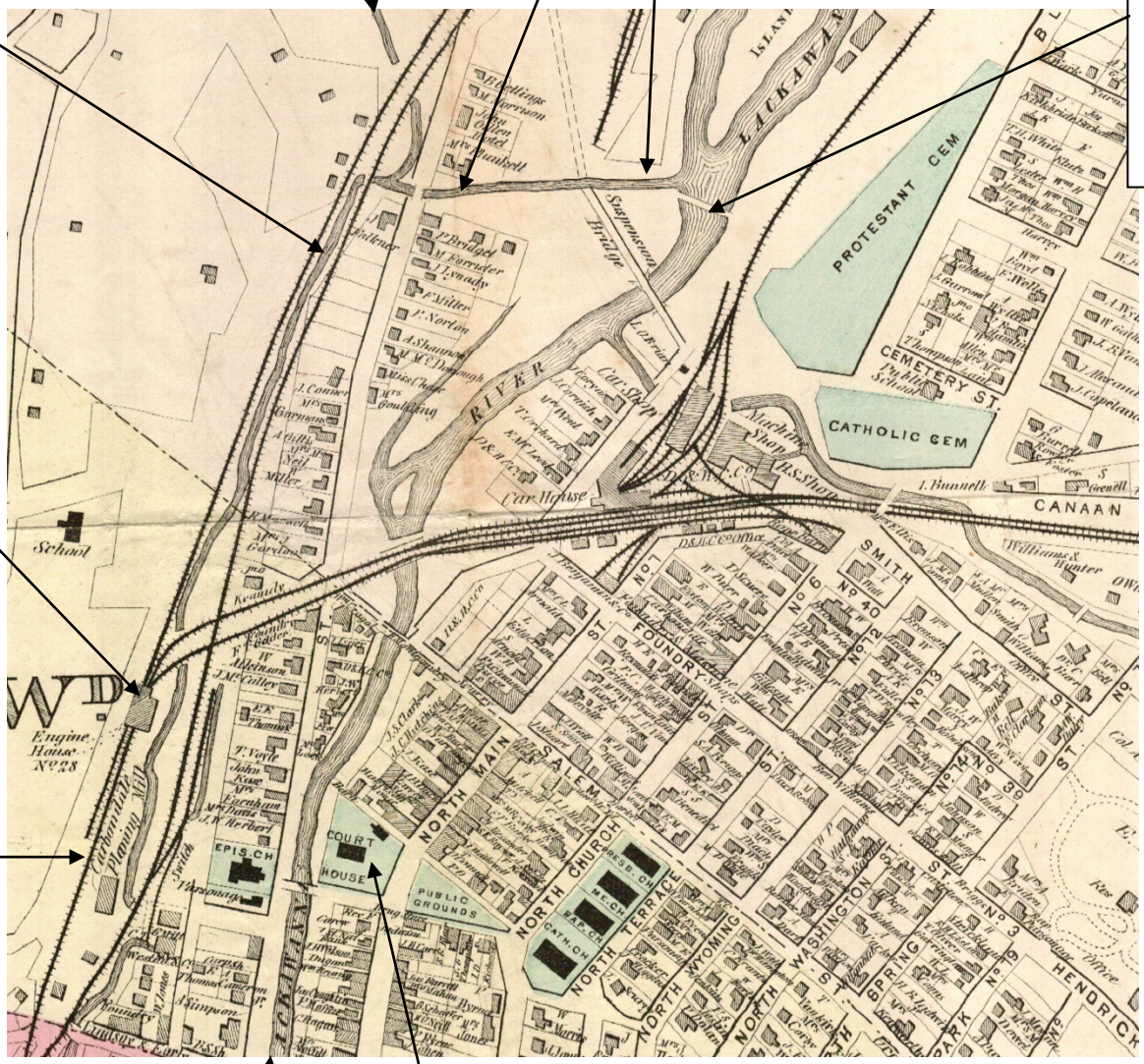
In the first detail from that map, we see the Carbondale Canal, flowing North-South between the D&H steam line tracks and the D&H Gravity Railroad tracks. On its southward journey, the Canal provided water for waterwheels in several locations.

Final section of the raceway from the Fallbrook Creek to the Carbondale Canal

Raceway from the Lackawanna River to the Carbondale Canal

Carbondale Canal, between Gravity track (left) and D&H steam line track (right)

Dam on Lackawanna River to force water into the Carbondale Canal



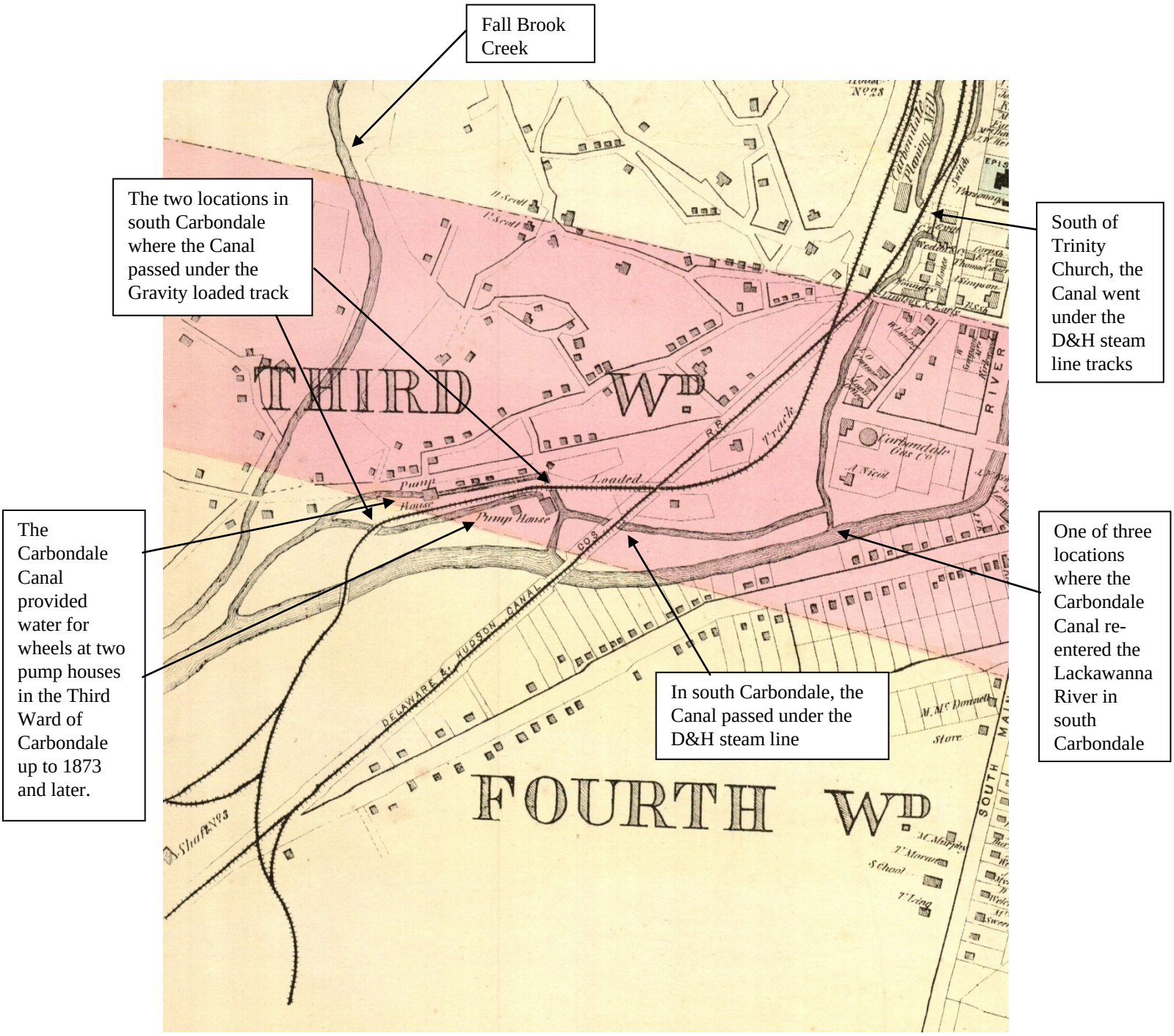
"Engine House No. 28" in 1873, when this map was drawn. The water wheels that powered this plane, beginning in 1853, were replaced by a stationary steam engine in 1859.

The Carbondale Canal provided water for wheel at Carbondale Planing Mill

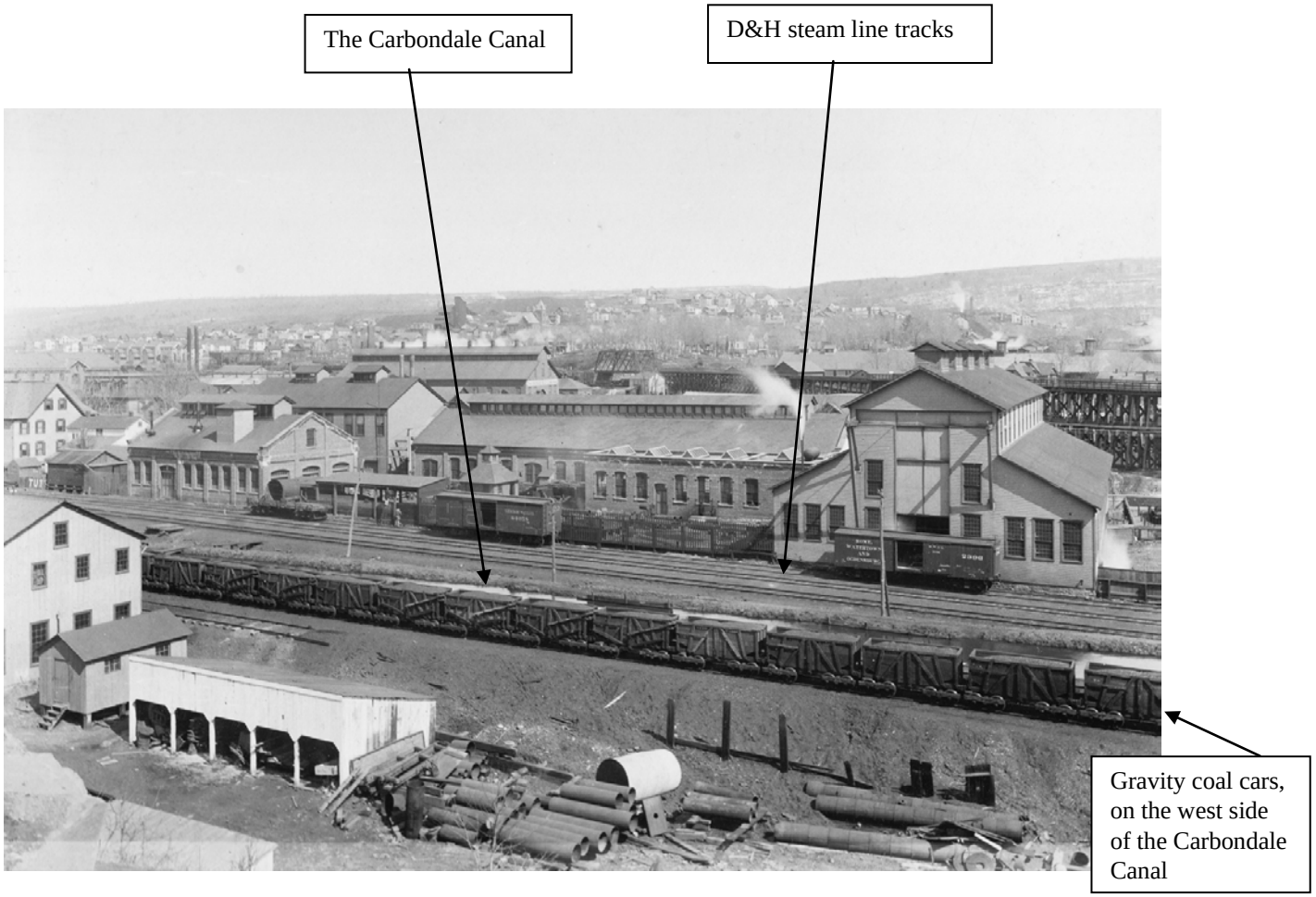
Lackawanna River

Carbondale City Hall and Court House

In the second of these views, the Carbondale Canal crosses and re-crosses the D&H Gravity Railroad tracks and the D&H stem line tracks (twice it passes under the "loaded" track on the Gravity Railroad, and twice it passes under the D&H steam locomotive line) before re-entering the Lackawanna River, in three different locations, in South Carbondale.

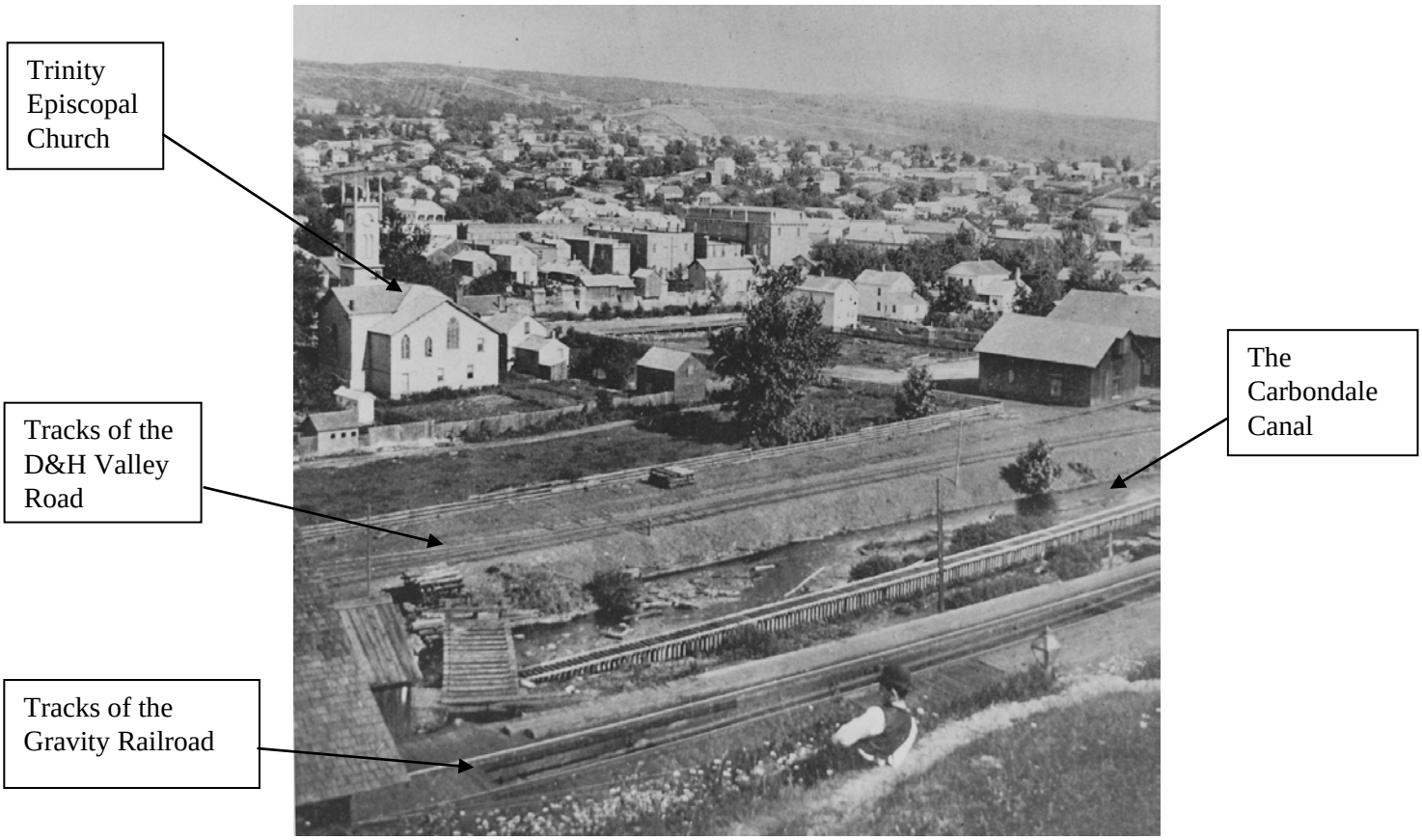


Here is another view of the Carbondale Canal. It can be seen just above the long row of Gravity coal cars in this photo, in the Gritman Collection of the Carbondale Historical Society.



Shown below is a photo, by Thomas H. Johnson, that was taken from the hill above Plane No. 28 engine house. In this photo, the Carbondale Canal is seen between the Gravity tracks and the steam-line tracks. Photograph in the collection of the Carbondale Historical Society and Museum.

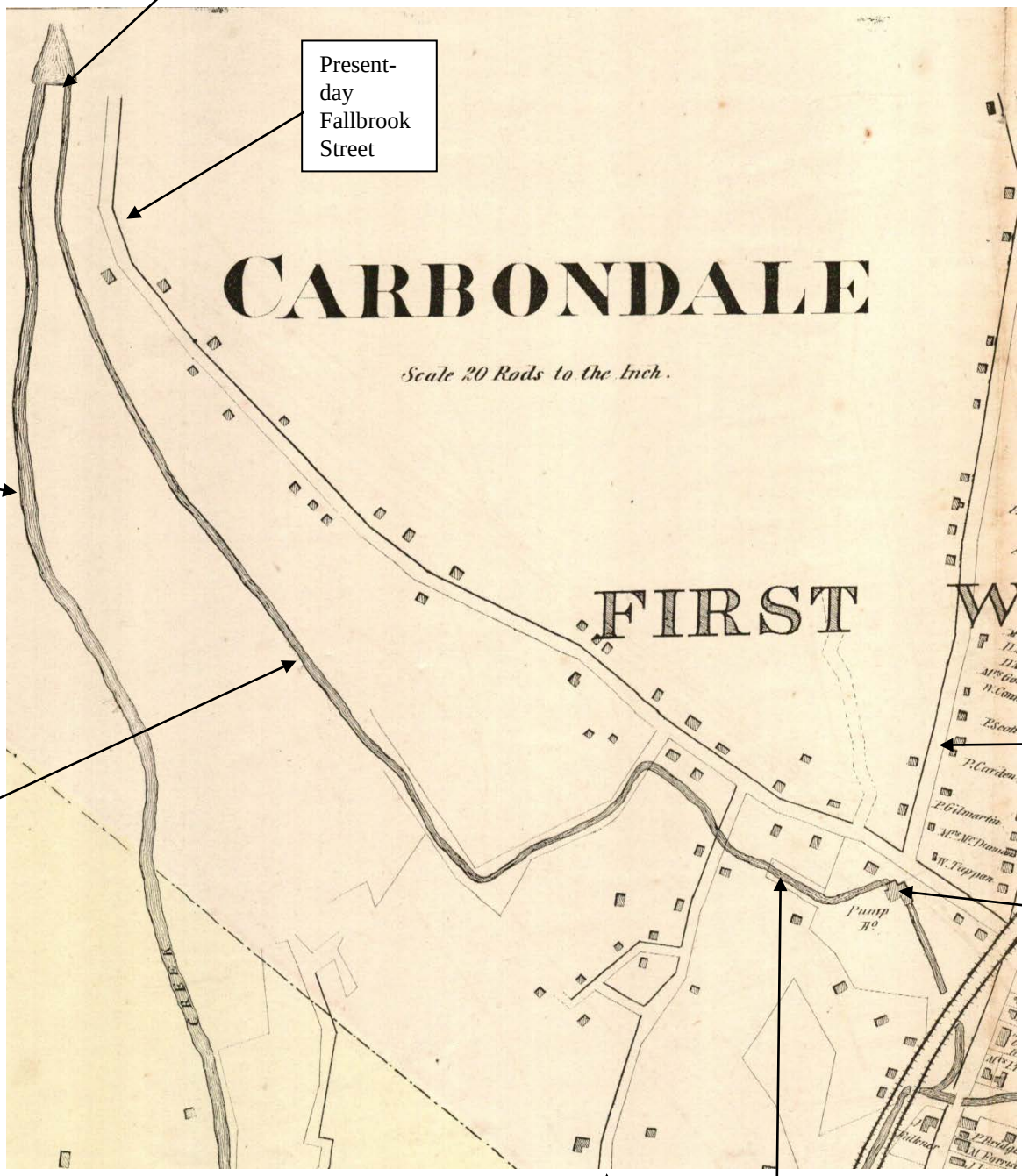
Twenty-one Johnson photographs are in the collection of the Wayne County Historical Society. Thirty-two large-format albumen prints of Johnson's D&H photographs, each on a gilt-bordered mount, with "Johnson, Photographer, Scranton, Pa." in gilt or letterpress and the title and Company credit in letterpress on the mount, circa 1860-71, each approximately 12 by 16 inches, were sold at Sotheby's in New York on April 7, 1998 for $66,300. These photographs by Johnson are among the very few large format photographs taken in the eastern United States during the Civil War era.



The Raceways that Fed the Carbondale Canal:

Raceway from Lackawanna River: In the map view of Carbondale on p. 78, the raceway to the west from the Lackawanna River is clearly shown. This raceway passes through the site where one of the Van Bergen buildings would be built, and then under Dundaff Street and the D&H locomotive track, before heading South, between the D&H locomotive tracks and the Gravity Railroad tracks. Also in this view, the end of the raceway to the Carbondale Canal from the Fallbrook Creek is shown.

Raceway from the Fall Brook: The second raceway that fed the Carbondale Canal is, remarkably, an appendage of the Fall Brook, which was dammed up below Fall Brook Falls. From that dam, a raceway, shown on the detail from D. G. Beers shown below, was structured to flow west of present-day Fallbrook Street and through Carbondale's West Side, passing through a pump house (on the west side of present-day Fallbrook Street, opposite the beginning of Farview Street) before it descended to the valley floor and passed under both the steam line tracks and the Gravity tracks before it merged with the Lackawanna River raceway before it went under the steam line tracks to surface between the steam line tracks and the Gravity Railroad tracks.



Dam on the Fall Brook, to direct water into the raceway for the Carbondale Canal through Carbondale's West Side

Present-day Fallbrook Street

Fall Brook Creek, as it descends into Carbondale

Raceway from Fall Brook Creek through Carbondale's West Side

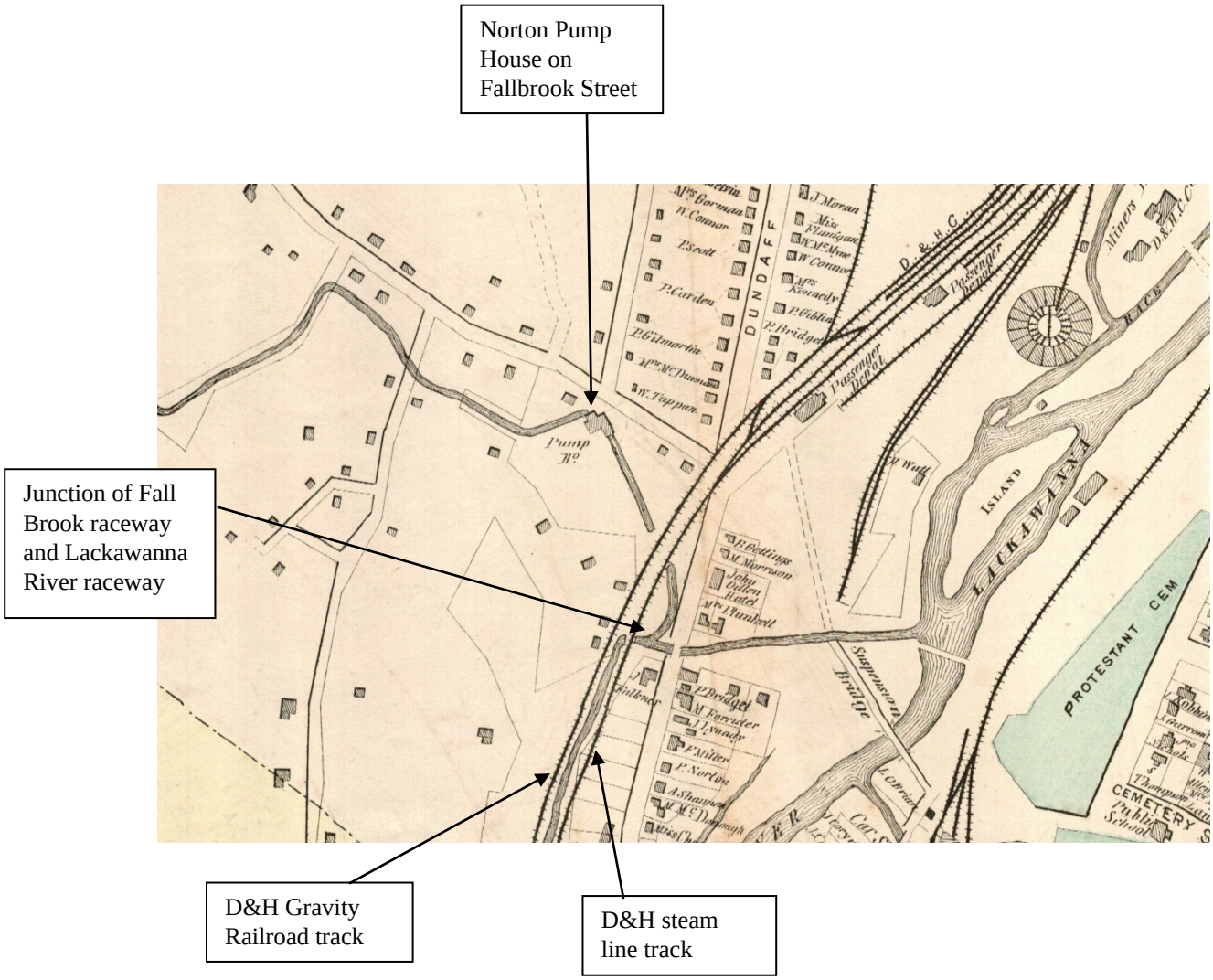
Present-day Farview Street

Norton Pump House

Present-day Hospital Street

This alley is called "the Canal" by present-day local residents

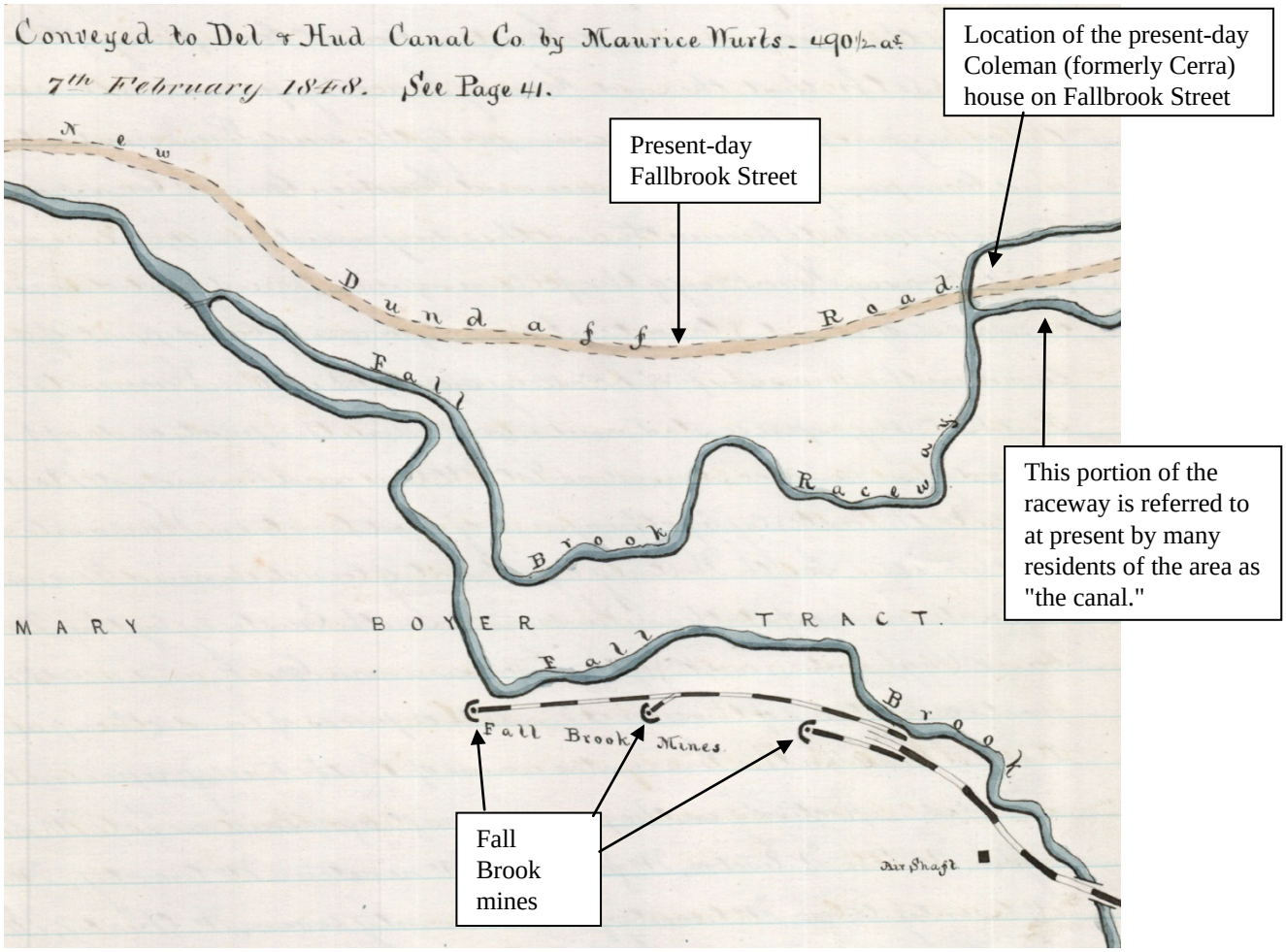
The raceway on the Fall Brook, through Carbondale's West Side came down to the west of Fallbrook Street and into/through a pump house and then down into the flats through the "alley" above Fallbrook Street. That alley is called "the canal" to this day by many residents of Carbondale's West Side. Here is a second look at the junction of the two raceways that fed the Carbondale Canal.



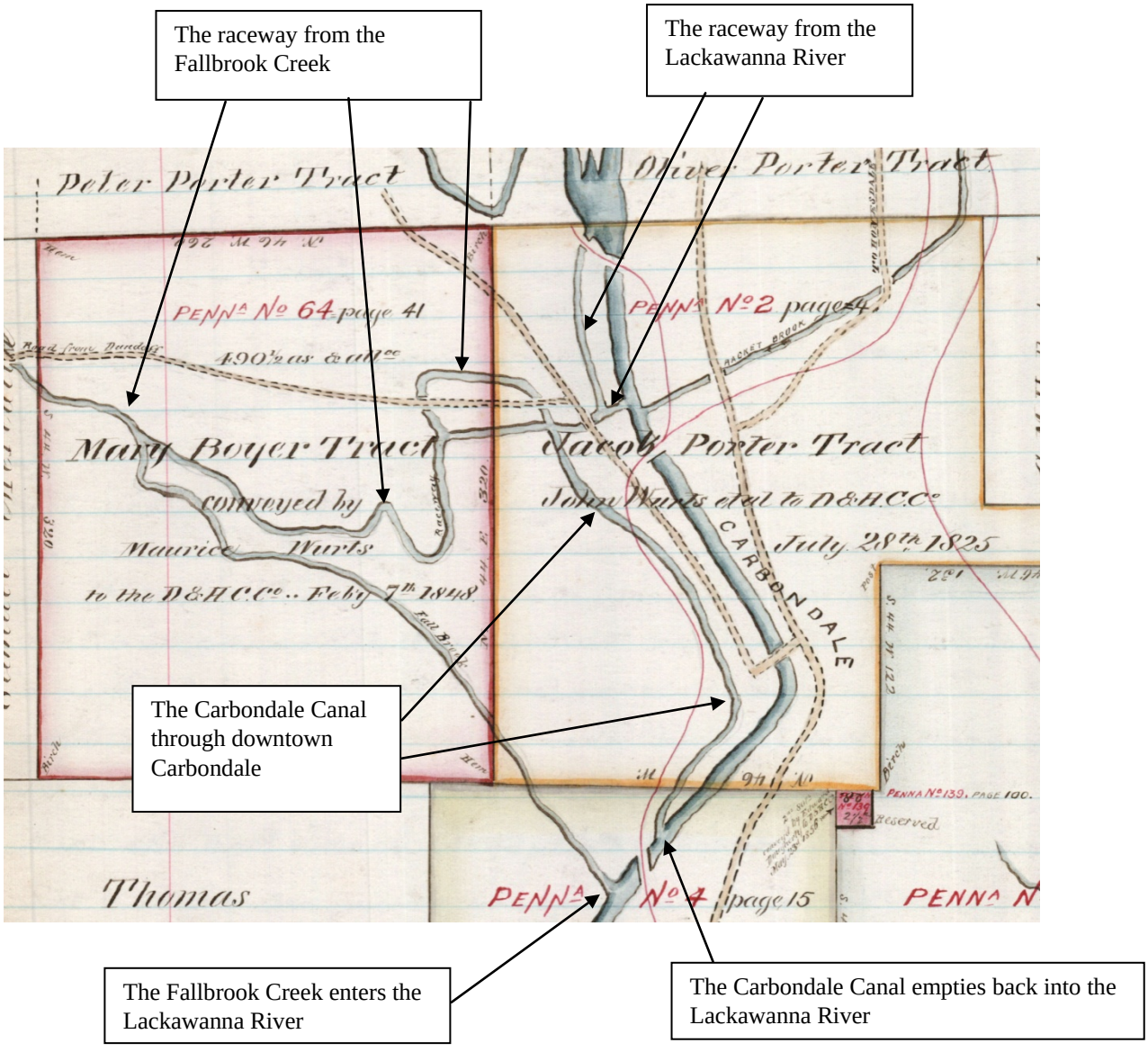
The pump house shown on the map given above is the Norton Pump House referred to in the article given below: **"AFFAIRS OF THE MINING WORLD. /. . .Norton Pump House Being Taken Away. /** . . . Another landmark is now being removed. This time it is the Norton pump house on Fallbrook street. It was abandoned about six months ago other means being now employed to take the water from the Delaware & Hudson mines, a service which it has

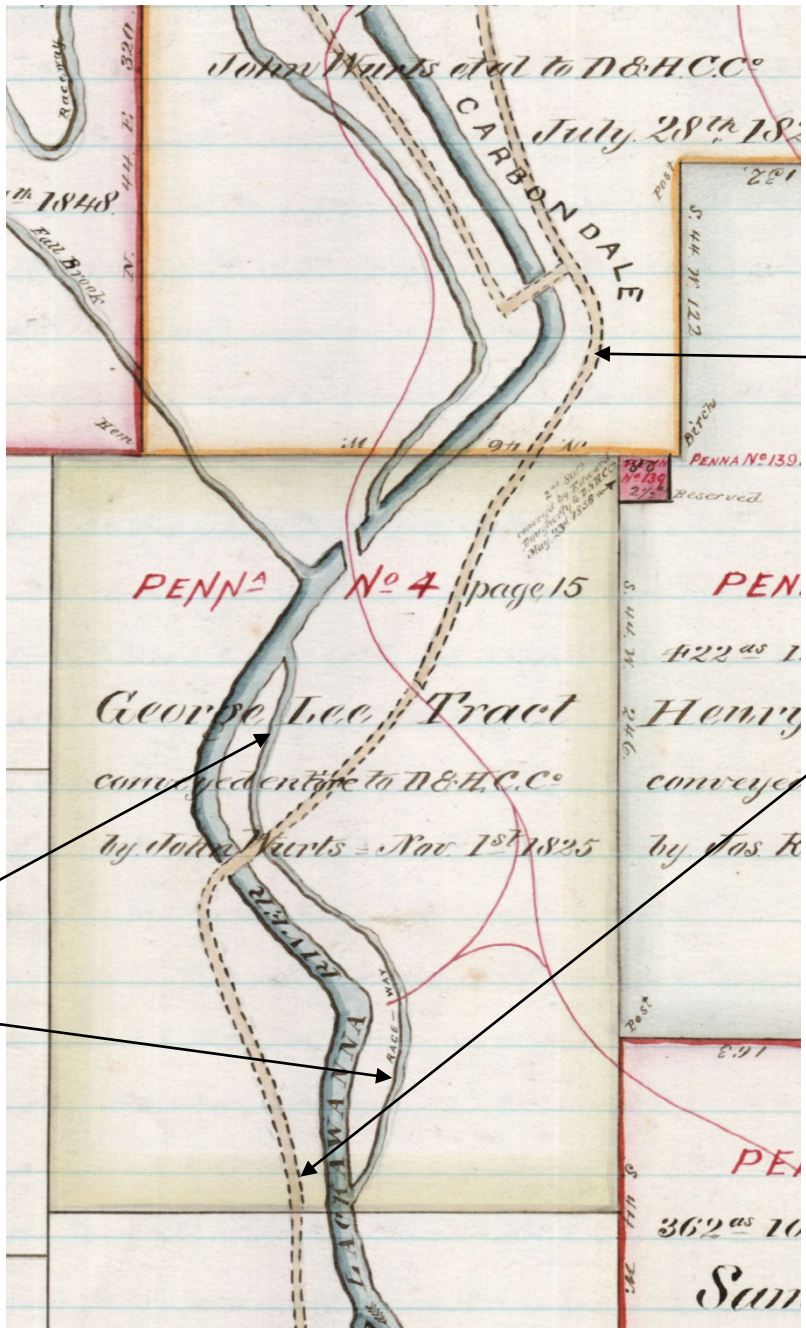
performed for scores of years [emphasis added]. Here again a question of economy led the company to construct large drains in the mines, running all of the water to No. 3 shaft where more powerful steam pumps, bring it to the surface and force it into the Lackawanna river. / The machinery in use at the pump house has been removed and men are now engaged in tearing away the building and trestling used to support the aqueduct that has furnished the power for so many years. Its disappearance will make a marked change in the appearance of the vicinity and may be followed by the widening of the roadway at that point another much needed improvement." *(Carbondale Leader,* August 16, 1899, p. 5)

Initially the Fall Brook Raceway bifurcated at the point where it makes its ninety-degree turn at the pump house, with one branch of the raceway descending on the south side of Fallbrook Street and one branch of the raceway descending on the north side of Fallbrook Street, as can be seen on the map on page 43 in *D&H Deeds Luzerne* that is shown below. Note that the roadway that is identified on the map detail given below as "New Dundaff Street" is present-day Fallbrook Street.



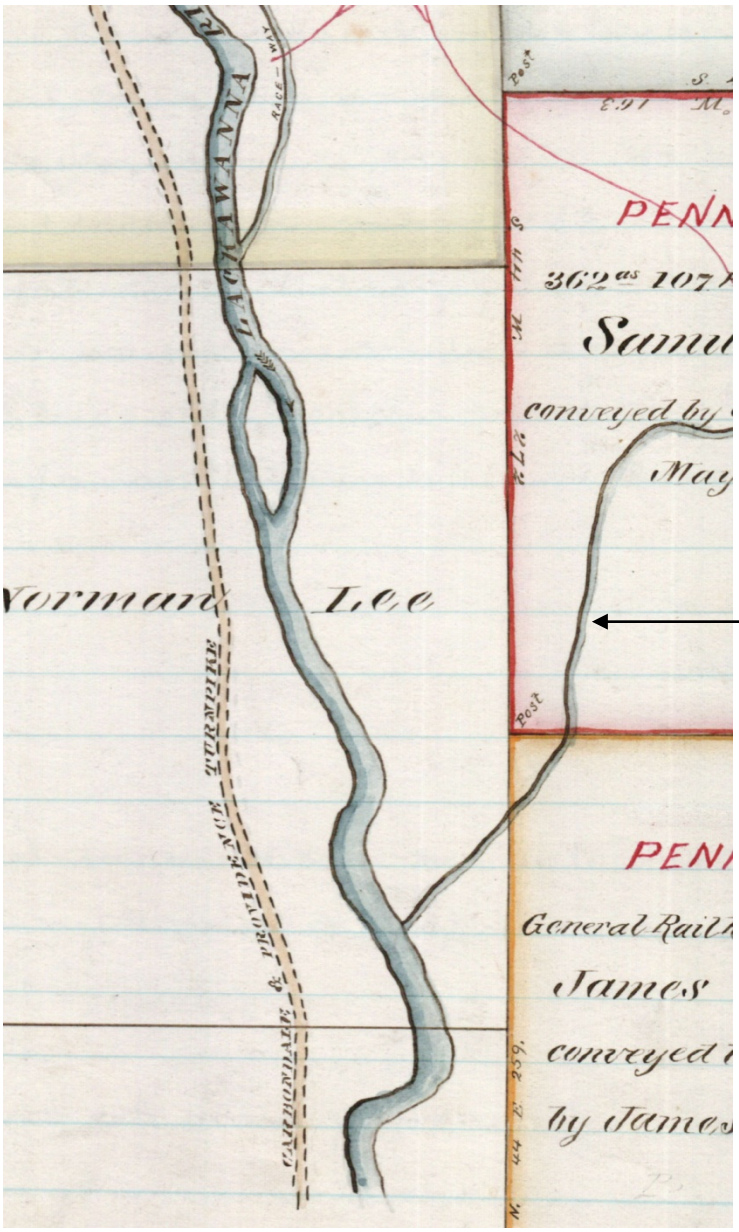
An excellent view of the entire Carbondale Canal as well as the raceways that fed that canal is presented on the map that illustrates the Release, dated May 9, 1862, between Peer Walsh and the Delaware and Hudson Canal Company. This release is on page 273 of the *D&H Deeds Luzerne;* the map is on page 274. Here are three views of that map:



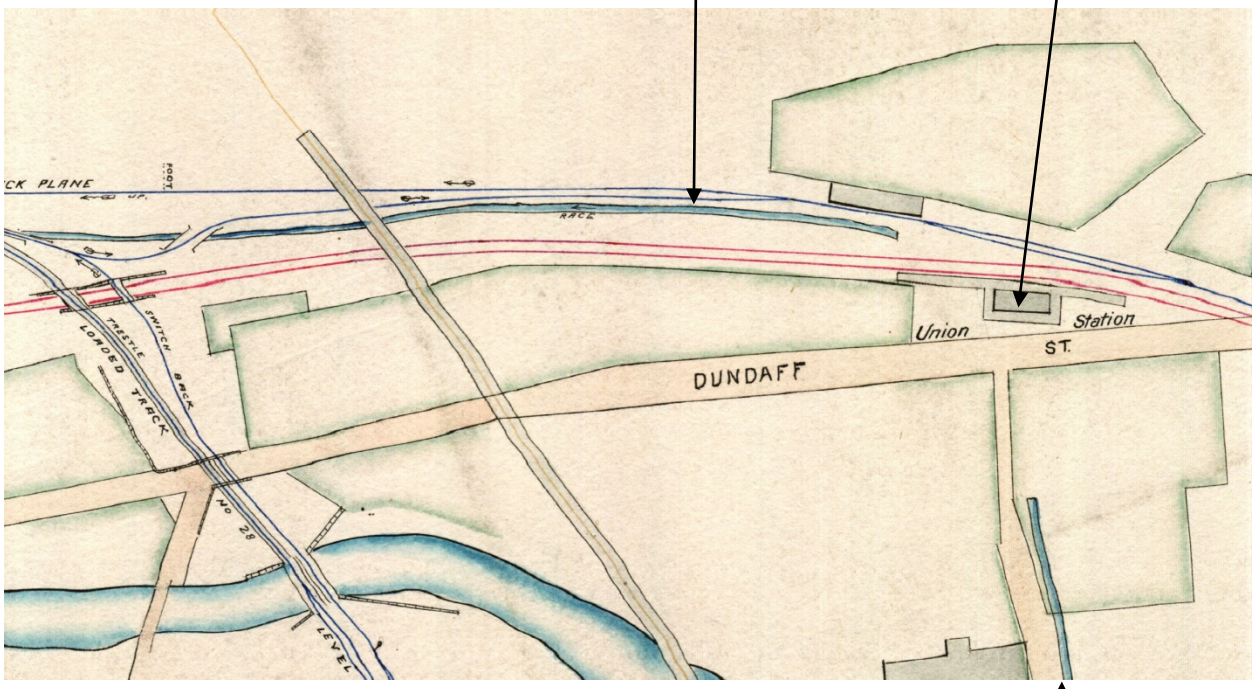


The Carbondale & Providence Turnpike through downtown Carbondale

Raceway off the Lacka-wanna River in south Carbondale


Post
PENN
362 as 107
Samu
conveyed by
May
Norman Lee
Post
PENN
General Rail
James
conveyed
by James
CAREDONIA & PHILLIPSBURG MINERAL RAILROAD
PENNSYLVANIA
RAIL WAY
Powderly Creek.

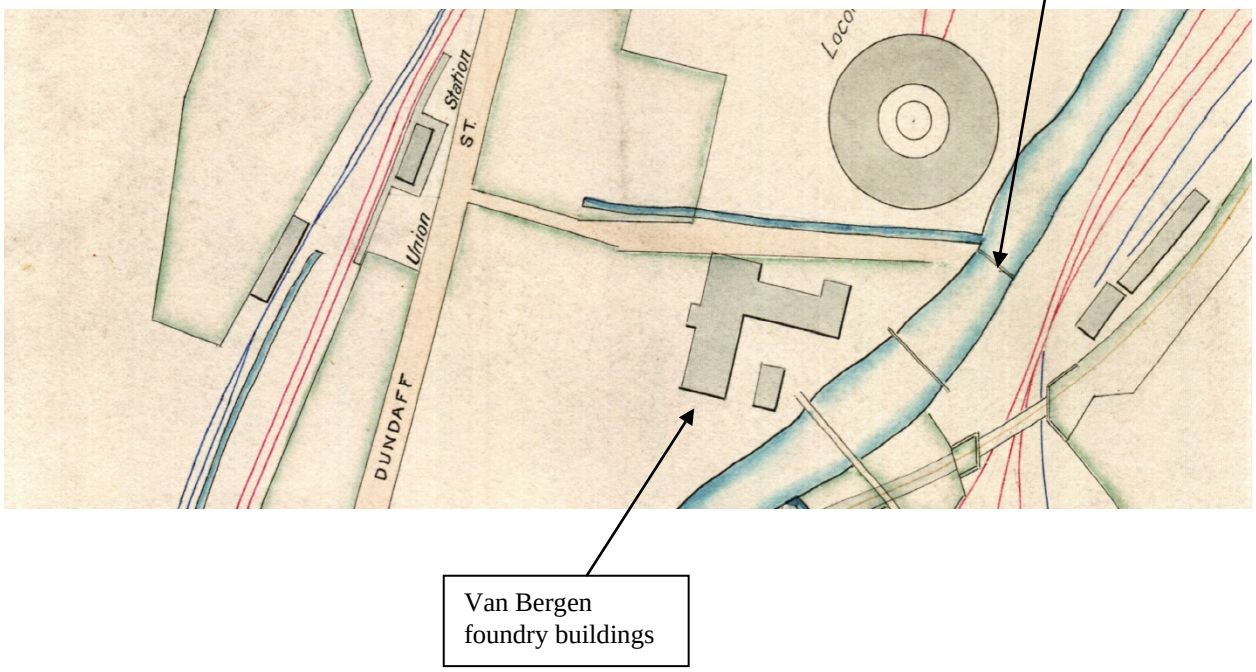
Four additional views of the Carbondale Canal from the 1895 Gravity Railroad map volume:

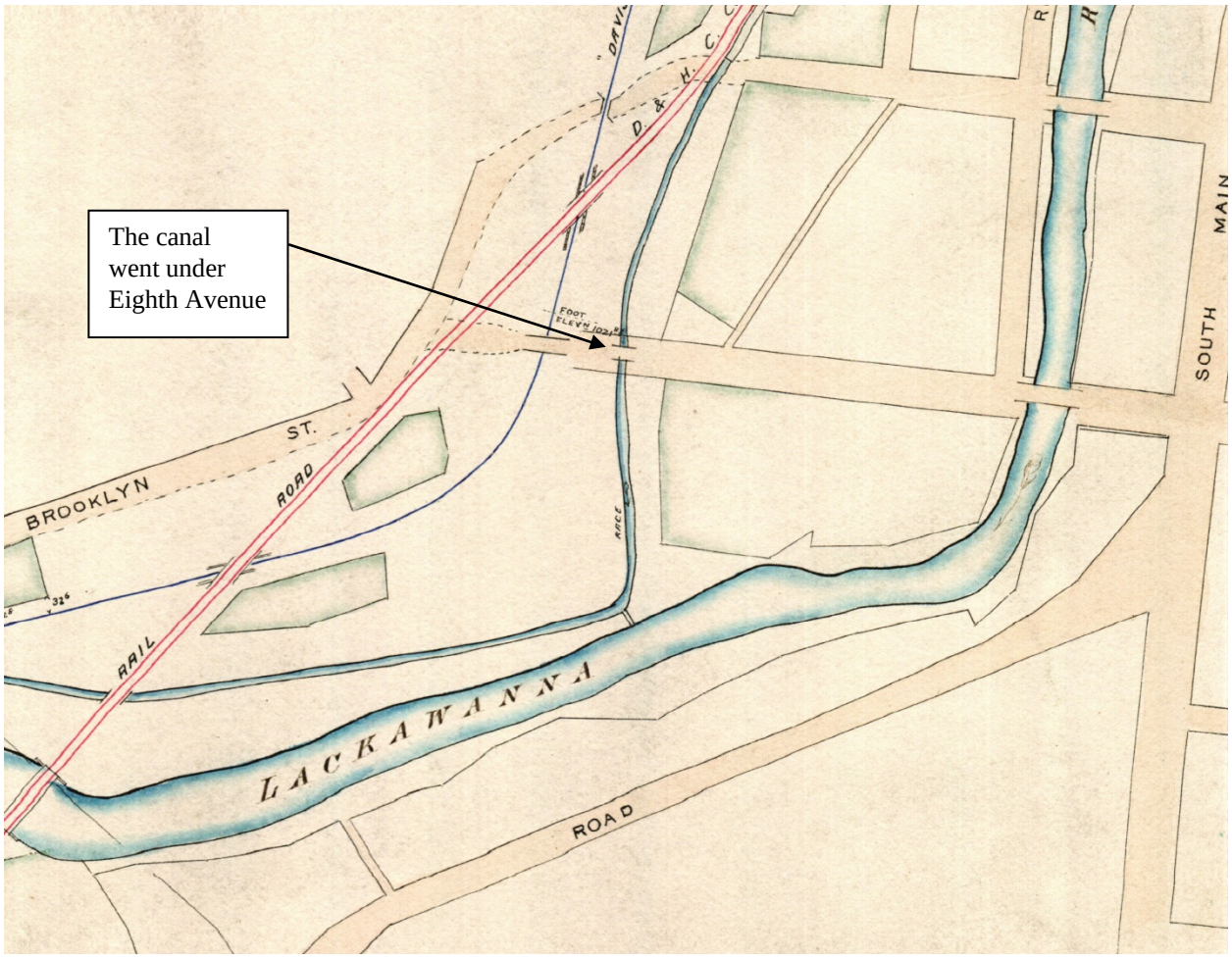


Carbondale Canal: between the D&H steam line tracks and the Gravity tracks

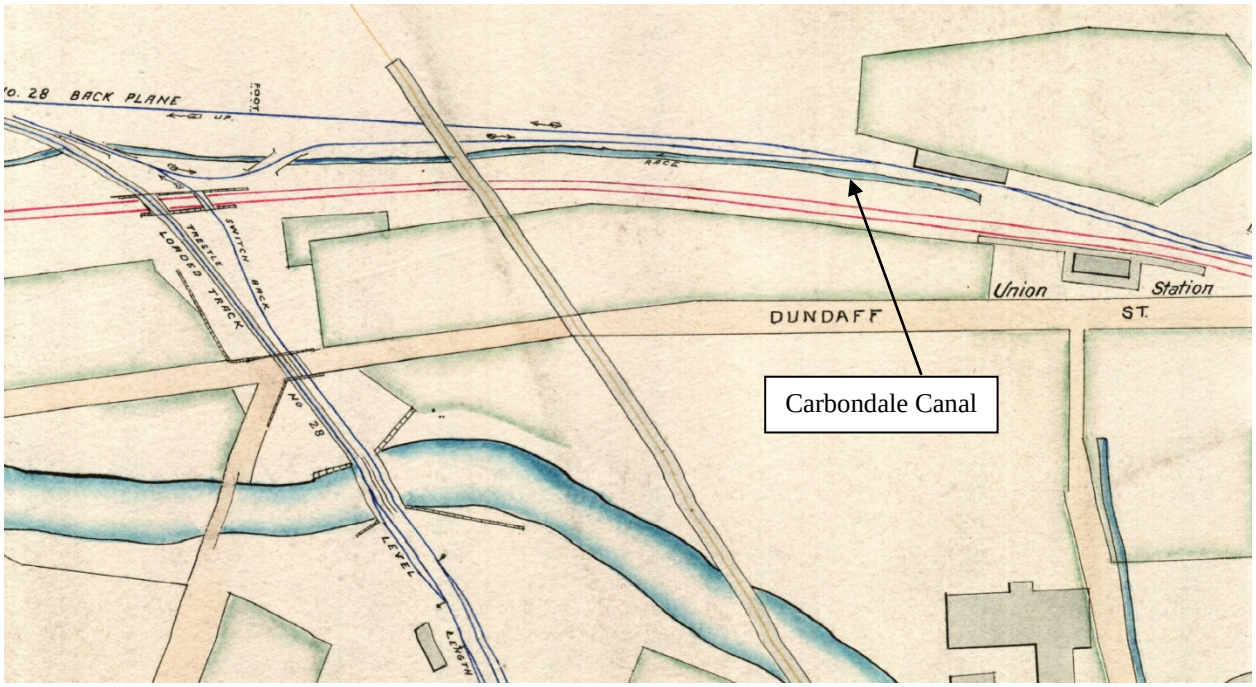
Union Station

Raceway from Lackawanna River. Note that it went under the Van Bergen Building, Dundaff Street, and the D&H steam line tracks, before emerging between the D&H steam line tracks and the Gravity tracks


Dam on Lackawanna River to encourage water into raceway
Station
ST.
Union
DUNDAFF
Van Bergen foundry buildings


The canal
went under
Eighth Avenue
BROOKLYN
ST.
ROAD
RAIL
LACKAWANNA
ROAD
SOUTH
D. & H.
FOOT
ELEVN

The Carbondale Canal in the Plane No. 28 area:



In 1878, a child of John Gallagy drowned in the D&H Canal raceway near the head of Plane No. 28.

“**Death by Drowning. /** A young child of Mr. John Gallagy, a D. & H. engineer, was drowned on Sunday afternoon. His parents reside on Dundaff street, near the company’s race way, that conducts water from the Lackawanna to the water wheel at Davis’ head. The child, a son, about three years of age, was allowed to go out, about four o’clock to play. He was found three hours later at the foot of the schute opposite the Davis head, lifeless. He was borne by James Davis and other friends to the home of his grief stricken parents, but he could not be restored to life. The parents had been for some time searching for him.” *(Carbondale Advance,* May 25, 1878, p. 3)

In 1880, a mysterious death took place in the Carbondale Mining Canal.

"A DOCTOR'S MYSERIOUS DEATH. / Carbondale, Nov. 21.—Dr. John Townley, in former years an eminent physician, was found dead in the Delaware and Hudson Canal Company's *mining canal* on Saturday, with his head and face disfigured beyond recognition. He started out at 4 o'clock to make his regular monthly collections among his patients, and was last seen alive at 6 o'clock. He was born in County Cork, Ireland, in 1823, and sailed for America 12 years later. He settled in Carbondale in 1840, and has since practiced medicine in Wayne, Luzerne, and

Susquehanna Counties. His mysterious death occasioned great excitement among his friends, they believing that he was murdered and thrown into the canal by a band of desperadoes, who are committing depredations nightly in this section." *(The New York Times,* November 22, 1880)

The Carbondale Canal was still in existence in 1898, even though the water in the canal no longer powered water wheels in downtown Carbondale:

"SOME OLD LAND MARKS. / Relics of the Primitive Methods of 'Rapid Transit,' Up the Planes. / The suspension of the Gravity railroad recalls some of the things that have become antiquities in this pushing modern world. It is a well-known fact that the Gravity was built about seventy years ago. This was before the age of steam dawned upon these realms, and for nearly two generations the cars were pulled up [some of] the long inclined planes by water power. At Archbald at the foot of old plane C, stands an old water wheel. It was a contemporary of a generation that now sleeps on the eastern and western hills. That wheel was the machine that pulled the cars up the long incline of C plane. / A canal connecting with White Oak creek at its junction with the Lackawanna furnished the current that moved the wheel. It took half an hour for a single car to be pulled up the long plane. During the thirsty days of mid-summer when creek and river went dry the cars didn't climb the plane, and the hands were off until a good shower came. The wheel still remains, but the canal was filled up and now forms the bed of the Ontario and Western railroad, but the aged wheel still remains./ The old waterwheel and the canal were the ghostly haunts of these ancient days. The troubled spirits walked by the untroubled stream of the canal and along the waters in the sluggish river, while the night owls hooted at them from the dense dark grove that once stood upon the treeless hillside of the present day. Many a shade from the hidden land there told his troubles to the frightened wayfarer from out the shadows cast by the midnight moon. / But the axe of the railroad builder has exercised [perhaps 'exorcised' was intended] the spirits and the wild shriek of the steam engine has frightened away the grim gaunt ghosts of the good old days. / Carbondale still has a canal that sent cars up Davis' plane, [emphasis added] but the shades—if they ever existed there—have all withered and blown away." (clipping from the Scranton *Truth,* dated Saturday, October 29, 1898, in one of the Gritman scrapbooks)

A break in the Carbondale Canal in March 1899 caused much damage in the River Street area of Carbondale:

"Water Causes Much Trouble / Shortly before five o'clock yesterday [March 5, 1899] morning the bank of the canal that runs parallel with the Delaware & Hudson tracks from union to city station burst at a point just above the Ontario & Western abutment letting the water rush down the railroad and flooding the cellars and yards of River street. / At the point where the break occurred the canal is about ten feet above the railroad and the bank is quite thick. A short time

ago a gravity coal car jumped the track from the bridge that crosses the canal at a point below and it is thought that rubbish floating down in the water became lodged against the car and backed the water up above its usual height. The heavy rain of Saturday night brought increased pressure to bear on it with the result that a ten-foot section gave way. / It was about eight o'clock before the flow of water could be stopped and the large force of men at work succeeded in clearing the track before the first train was due. The canal is fed by the river, the inlet being between the Van Bergen foundry and the lower D&H round house. By closing the gate there, most of the water was stopped. / Men were employed all day yesterday in repairing the bank as the water is used by the company as motive power at the pump house below the city near the red bridge and also runs the turbine that operates the machinery of the Weston Mill company. / . . . a miniature pond was formed on the low land to the rear of Trinity church and the Sunday school room of the edifice had two feet of water over the floor. The carpet, organ, library books and other furnishings were ruined." *(Carbondale Leader*, March 6, 1899, p. 5)

Now that we know where the water came from to power these wheels in downtown Carbondale, let's have a look at Plane No. 28.

6012

Waterwheels on Plane No. 28

When the Gravity Railroad opened in 1829, Plane No. 28 did not exist.

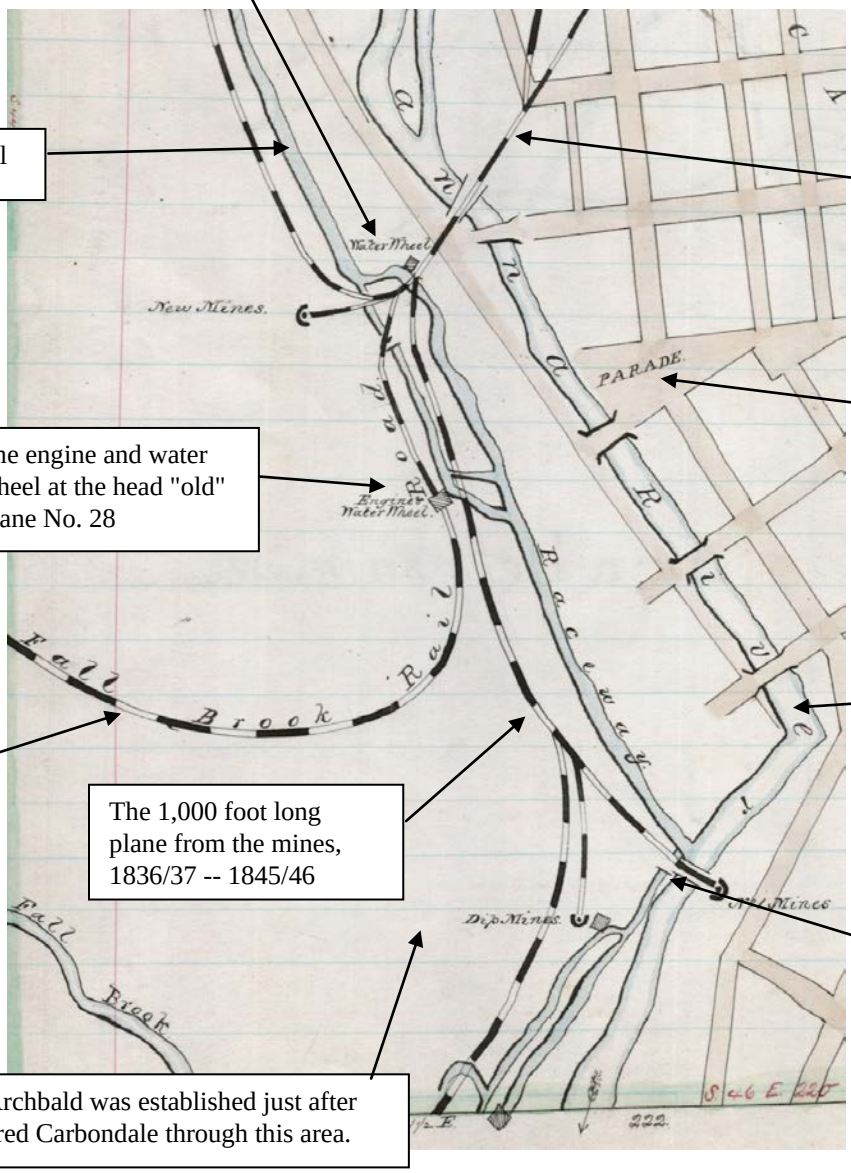
In the early drift mines, the coal was removed from the mines by using wheelbarrows. Lifting sweeps (hoisting devices actuated by a horse or a mule) were also used. When the mines went deeper into the coal beds, tracks were laid on which the coal cars were hauled to the surface by horses and mules.

At the mouth of the mine in Carbondale, there was a 300-foot long plane inclined plane, ascending 30 feet, from the mouth of the mine to a level. The coal cars were pulled up this plane by a horse. At the head of this 300-foot long plane, the cars entered upon a 2,000 foot long level, and were pulled by a horse to the foot of Plane No. 1. Here is what Torrey said about that plane in 1882:

"Starting at the mouth of the mine at Carbondale, the railroad commenced with a short inclined plane 300 feet long, ascending 30 feet, (or 1 foot in 10,) which was operated by horse-power. From the head of this plane the grade was near the natural surface of the ground a distance of 2000 feet to the foot of steam plane No. 1, ascending in that distance 45 feet (or 1 foot in 44.) This grade was so heavy that is required one horse to each car carrying three tons of coal." *(Torrey*, 1882)

Beginning in 1836/37, the cars were pulled from the mines up a 1,000 foot long plane by a water-powered hoisting engine. From the head of that plane, the cars were pulled by horses to the foot of Plane No. 1. These procedures were followed up to 1845/46, when "old" Plane No. 28 was established and the plane from the mines, with its water-powered hoisting engine, was removed).

The 1,000 foot long plane from the mines, with its water-powered hoisting engine, are shown on the map detail given below from the map on p. 12 in *D&H Deeds Luzerne I.* This map illustrates the deed, pp. 1-6, dated July 28, 1825, between John Wurtz & others, Trustees, and The



Water-powered hoisting engine at the head of the 1,000 foot mine plane, 1836/37—1845/46

Carbondale Canal

The level from the head of the two planes shown here to the foot of Plane No. 1

Present-day Memorial Park and Carbondale City Hall

The engine and water wheel at the head "old" Plane No. 28

The Fall Brook Rail Road: from the Fall Brook mines to Plane No. 28. The Fall Brook mines are shown on the map on the following page.

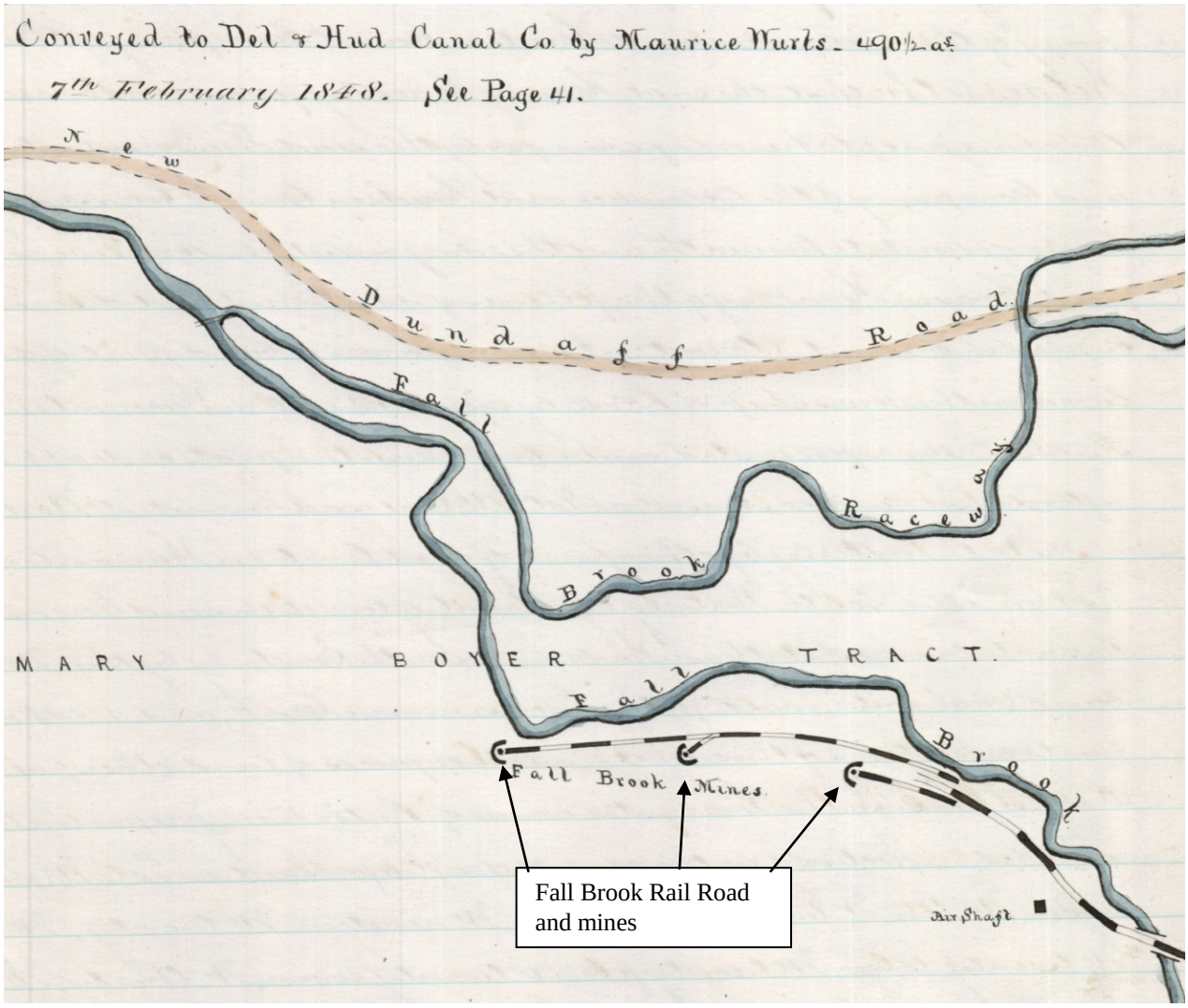
Lackawanna River

The 1,000 foot long plane from the mines, 1836/37 -- 1845/46

Carbondale Canal

The loaded car level from Archbald was established just after this map was drawn. It entered Carbondale through this area.

he Fall Brook Rail Road ran between the Fall Brook mines and Plane No. 28. The mines are shown on the map given below from p. 43 of *D&H Deeds Luzerne I:*



D&H Coal shipments for 1837 reached a new high: 115,000 tons. Adding a water-powered hoisting engine to the 1,000 foot long mine plane in 1836/37 may well have made it possible to s ship more coal in 1837 than previously.

"Old" Plane No. 28 (see the map on page 94) was established in 1845/46 and served until 1853, when the plane was redesigned. This 1845/46 plane made it possible to transport coal to the foot of Plane No. 1 from (1) the newly opened mines in the Carbondale area (the Powderly mine started operations in 1845; the Fall Brook mines opened in 1846), and (2) the mines in Archbald, the coal from which was now being shipped to Carbondale over the newly-established level (not shown on the map on page 94) from the top of the hill at Archbald to the Plane No. 28 area in Carbondale.

Powderly mine side note: Before the opening of the extension of the Gravity Railroad to Archbald in 1846, empty coal cars for the Powderly mine (which began operations in 1845) were let down Plane No. 28 and then pulled back to the Powderly mines by horses. Each horse drew four coal cars and a horse car on which he rode back. This we have learned from an undated newspaper article titled “The Celebrated Gravity Road” (probably published in the *Carbondale Leader* in the 1890s) in the archives of the Historical Society. Therein, we read:

“The Gravity extended only from Honesdale to Carbondale until 1846. It was then extended to Archbald. In order to get the light cars to Powderly mines before this [before the line was extended to Archbald] they were let down plane 28, which was then [1846] run by water, and pulled back to the mines by horses. Each horse drew four coal cars and a horse car on which he rode back.”

After the line was extended to Archbald, the light cars for Powderly were no longer let down 28 and pulled back to the mine by horses. With the Blakely level in place from 1846 on, the empties for Powderly could have been delivered there from either the Blakely level or from the level for loaded cars from Archbald to Carbondale. The loaded coal cars from the Powderly mine were sent into downtown Carbondale and the foot of Plane No. 28 via the level for loaded cars from Archbald to Carbondale.

To move the loaded coal cars from the Powderly mines and the Fall Brook mines and from Archbald from the level ground at the foot of "old" Plane No. 28, the cars were pulled up this plane by an engine that was powered by a water wheel, with water from the Carbondale Canal. At the head of this plane, the loaded coal cars were moved onto a level, on which they were pulled by horses to the foot of Plane No. 1. This point is substantiated by William Johnson, who noted:

“Previous to 1853 there was a level extending from the head of the old No. 28 plane to the foot of No. 1. Across this the cars were pulled by horses. The head of No. 28 plane was then some feet lower than it now is and the foot of No. 1 somewhat higher. On the plot at the foot of Salem avenue was a fine spring to which people went from all sections for water. John W. Aitken, father of the present John Aitken, at one time made a pond there and put over a thousand trout in it, but the boys soon caught these."

"New" Plane No. 28 was established in 1853 and served until 1859, when Plane No. 28 was again redesigned.

In 1853, "old" Plane No. 28 was completely restructured, to become a component of "new" Plane No. 28. A new water wheel, with an engine powered by water from the Carbondale Canal, was installed at the new head of the old plane. This we have learned from William Johnson:

"The first water wheel in use on the old gravity [in Carbondale] was located near the head of the old No. 28 plane. At first [1846] it did its work very well but later [1853], when the business had largely increased, it was decided to divide this plane and another wheel was constructed at the new head of the old plane which stood near the present Mills & Baker property. This change was made in the year 1853, Charles P. Wurts was at that time superintendent of the company, he having come here in 1851. James Dickson was master mechanic and William Ball, then superintendent of machinery, had charge of the work of constructing the wheels."

In that same year, 1853, the decision was also made to establish two planes at the Plane No. 28 site. In addition to re-structured plane and waterwheel at the site of "old" Plane No. 28, a second plane, with an engine powered by two waterwheels with water from the Carbondale Canal, would also be built north of the re-structured plane and waterwheel at the site of "old" Plane No. 28.

The second plane, with two waterwheels, on "new" Plane No.28:

This second plane on Plane No. 28 was near where the D&H coal pockets were later built, which is the site where the buried water wheel and wheelpit were found in 1902. An overshot water wheel fifteen feet in diameter and ten feet abreast was established there, in a wheelpit, but a sufficient fall could not be obtained, so a second wheel, slightly smaller, was constructed there and geared to the first one. All this we learn from William Johnson:

"In 1853 when the change was made the head of the second plane was near where the present local coal pockets stand, midway between No. 28 and No. 1 planes. To pull the cars up this plane a water wheel was constructed at its foot, where the old wheel pit was recently discovered. This wheel was fifteen feet in diameter and ten feet abreast and was made of heavy oak and pine. It

was run with an overshot current taken from the Lackawanna river. There was plenty of water but a sufficient fall could not be obtained so a second wheel, slightly smaller, was constructed and geared to the first one. There was more than enough water in the current to fill the buckets of the big wheel and the surplus was used to run the second one. In this way plenty of power was secured to whisk the cars up the plane at a lively rate."

By means of these two new planes that were established in 1853 (and which remained operational until 1859), loaded coal cars from (l) the mines in the Carbondale area (those south of the Plane No. 28 site as well as those from the Powderly and the Fall Brook mines), and (2) the mines in Archbald were moved to the re-designed level from the heads of those planes to the foot of Plane No. 1. This newly designed and installed level was graded so that the loaded coal cars that were moved thereon moved by gravity to the foot of Plane No. 1, where they were inserted into the Gravity Railroad system and the coal shipped to market.

The third plane, with one waterwheel, 300 feet north of the second plane:

And, yet another waterwheel was established, about 300 feet north of the two waterwheels that were midway between No. 28 and No 1 planes. This, too, we have learned from William Johnson.

"The same stream was used to run a third wheel located about 300 feet north of the two mentioned. This was used to draw the coal cars up from the old mine, the opening to which may still be seen in the base of the west side bluff."

This "third wheel" is likely the wheel that Alexander Gillies, Sr. remembered when he wrote his recollection to the *Carbondale Leader* at the time that the buried waterwheel was found at the foot of Salem Avenue. He affirmed that the buried waterwheel was "undoubtedly the wheel that was used for some time in the early fifties [the 1850s] to draw the cars up the slope in what was called the 'new' mine that was located near that point."

Plane No. 28, 1859-1899

In 1859, Plane No. 28 was again re-designed. All of the waterwheels were done away with, and two new planes (a North Plane and a South Plane), powered by a pair of stationary steam engines, were installed on Plane No. 28. From the head of the new Plane No. 28, a new level, built on a trestle, was established to the foot of Plane No. 1.

The stationary steam engines on this new Plane No. 28 were re-cycled D&H engines:

"In 1859 the water wheels in this city were abandoned and a pair of the engines displaced by the changes on the mountain road in the year previous were utilized for power on No. 28 plane. The short plane between No. 28 and No. 1 was done away with and a trestling [i.e., Level 28 in the air] constructed across the town. . ."

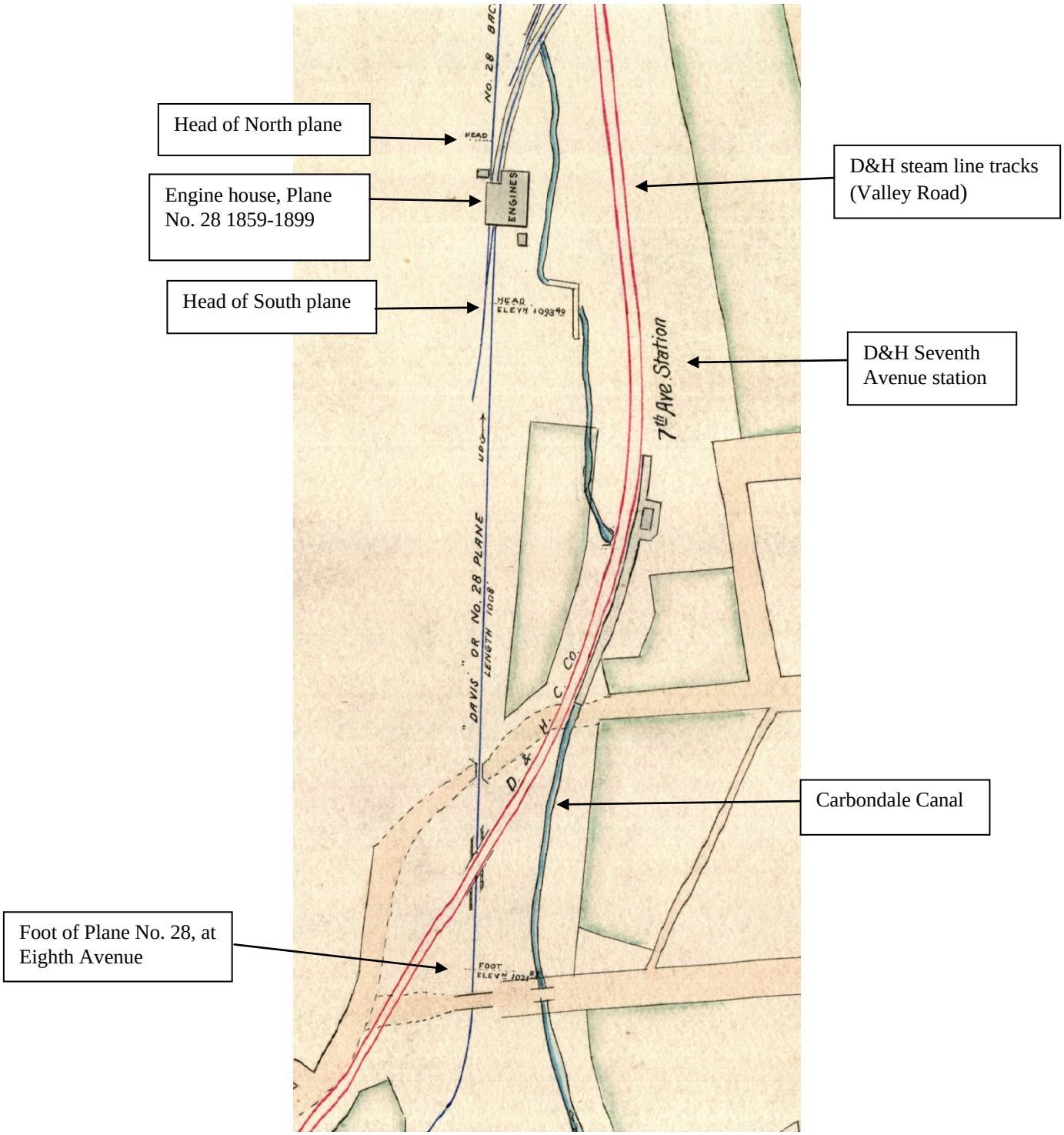
The two planes on the Plane No. 28 (1859-1899) are described by McComb as follows:

South Plane: loaded cars from down the valley rolled by gravity on the highworks (Level 28 from South Plane) to foot of No. 1. "On the south plane is operated the greater part of the coal brought from the different mines between Wilkes-Barre and Carbondale; also the passenger and freight trains which are run between Carbondale and Honesdale." McComb

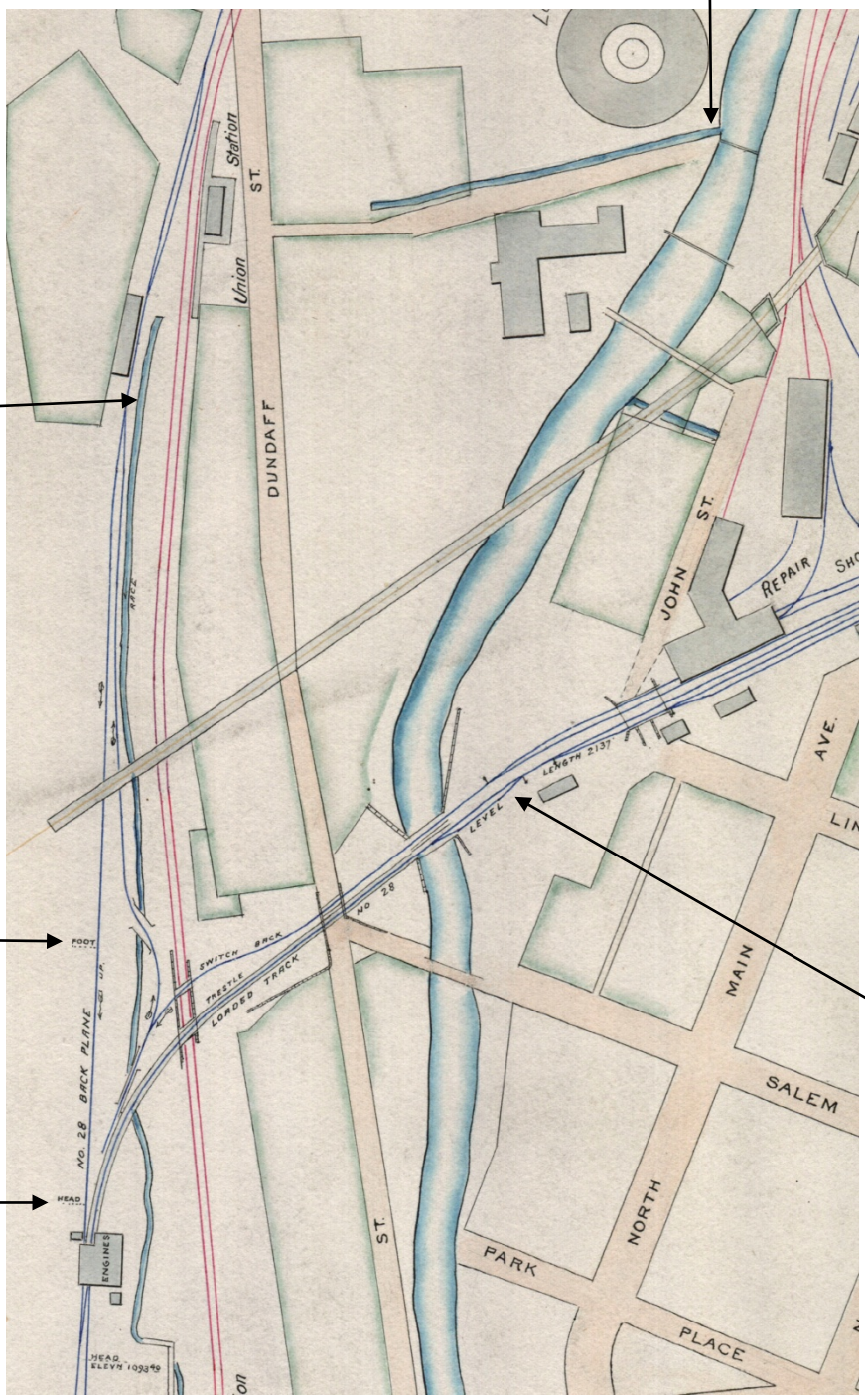
North Plane: "On the north plane is operated most all of the coal that is brought by locomotive power from the Erie Breaker, situated about two miles below here; also part of the coal prepared at the Lackawanna Breaker, the largest coal breaker in the world, which is situated about a half-mile above here. Besides the coal, a large number of empty cars that accumulate at the transfer pockets are taken back to the gravity road by means of the north plane." McComb

Given on the following two pages are two details from the 1895 Gravity Railroad map volume. In these two details, we see Plane No. 28 (1859-1899).

Detail from 1895 Gravity Railroad map volume, showing Plane No. 28 South plane:



Detail from 1895 Gravity Railroad map volume, showing Plane No. 28 North plane and Level No. 28:



One final note on waterpower, just for the record:

In the 1893 twenty-first anniversary edition of *The Carbondale Leader*, May 18, 1893, on the question of “Coal Operations,” we read: “Number 3 slope was opened about 1830 and was pumped by water power until 1838.”

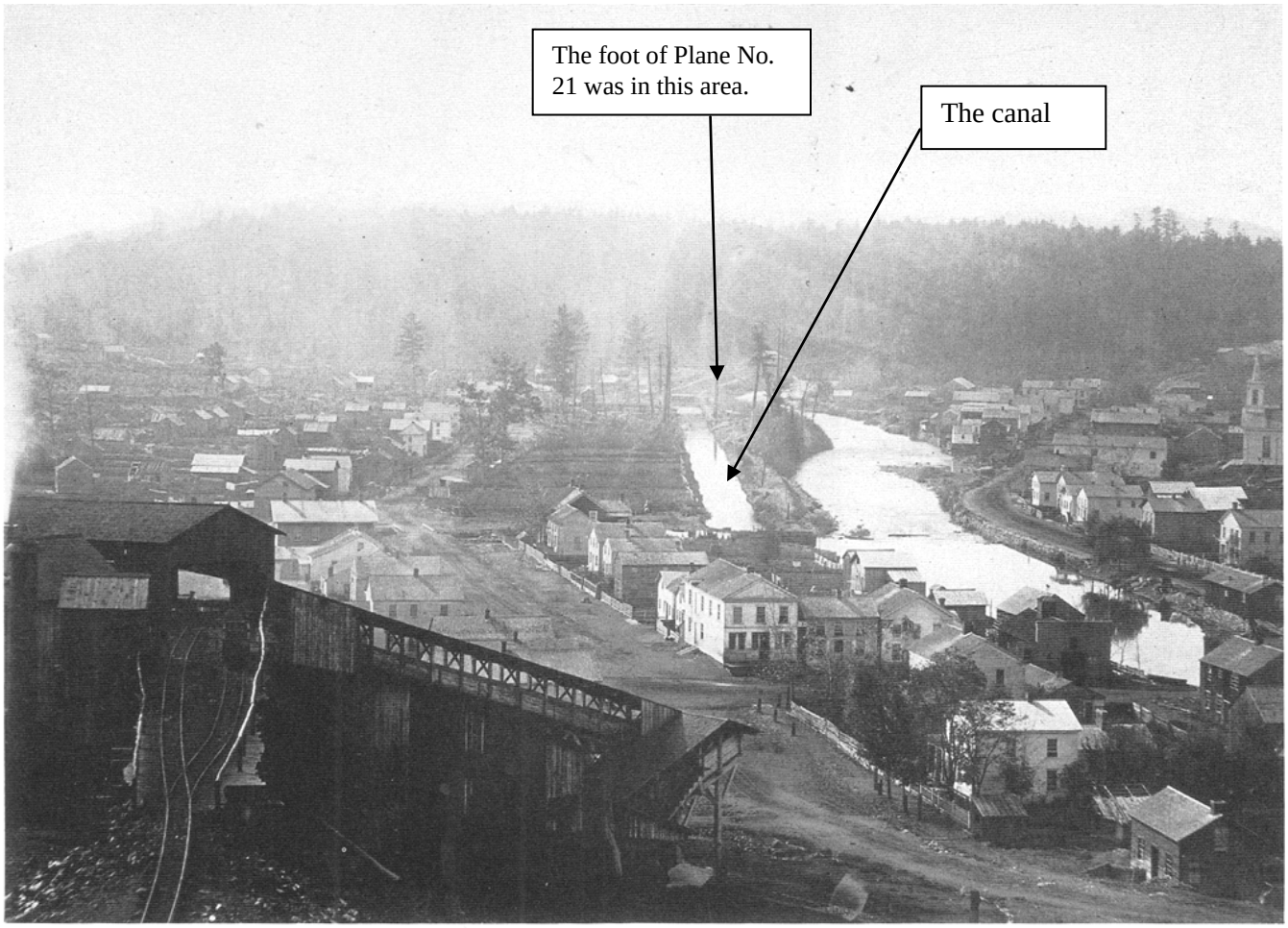
6013

Waterwheel on Plane No. 21

The third area of the Gravity Railroad where waterpower was used was in downtown Archbald, on Plane No. 21.

Plane No. 21, also known as C Plane, was the first of the south-bound planes between Archbald and Olyphant. When this plane was installed in 1859, the motive power on the plane was a waterwheel that was powered by a canal running from White Oak Run parallel to the Lackawanna River. In an article on the Gravity Railroad in Archbald that was published in the *Carbondale News* of January 10, 2001 (p. 7) we read: "The waterwheel at C Plane was powered by a canal which connected White Oak Creek to the Lackawanna River at a point where the river bends at the base of C Bush."

That canal is seen in the photograph of Archbald that is given below.



View of Archbald, reproduced here from page 31 *Of Pulleys and Ropes and Gear, The Gravity Railroads of The Delaware and Hudson Canal Company and The Pennsylvania Coal Company* by Philip Ruth.

The use of waterpower on Plane No. 21 was discontinued in 1865, at which time the canal was filled with earth, stone, and cinders, to become thereafter the roadbed of the New York, Ontario and Western Railway. From 1865 to the closing of the Gravity Railroad, the motive power on Plane 21 was a stationary steam engine at the head of the plane.

6014

Philip Hone's Speech on the Occasion of the Groundbreaking for the D&H Canal

On July 13, 1825, in the village of Rome, in the Mamakating Valley,* Sullivan County, ground was broken for the construction of the Delaware and Hudson Canal. The ceremony began at noon.

> *Mamakating which was later known as Rome and then as present-day Wurtsboro, Summitville, or Beatysburg. Hone, in his diary says that the groundbreaking was at "Rome, Mamakating Hollow." *Lowenthal*, on page 49, quotes James S. McEntee, who was present at the ceremony, and who wrote an account of the ceremony in 1874. McEntee says that ground was broken "in a field in the rear of Dr. Morrison's house." (James W. McEntee, "Story of the Canal," *Olde Ulster*, Vol. VI, No. 10, October. 1910)

Ground was broken in the village of *Rome,* on the Summit Level, where no locks were necessary, and where rapid progress in the construction of the Canal could be quickly made and seen. Most interestingly, ground was broken on the Erie Canal on the long level at *Rome,* NY, on July 4, 1817.

On the same day that Hone made his speech, 34 contracts (for 17 miles of canal construction) were signed to build half-mile sections of the canal. Later that year, Hone was selected/appointed Mayor of New York. By December 6, 1825, the remainder of the line of the canal was placed under contract. On January 7, 1826, Hone resigned as D&H president (to be replaced by John Bolton) but remained on the D&H Board of Directors until his death in 1851.

An excellent description of that groundbreaking ceremony, including the complete address that President Philip Hone delivered on the occasion, is given in the 4-part article, titled "Construction of the Delaware and Hudson Canal," by W. J. Coughtry, Recorder, that is published in four issues of *The Delaware and Hudson Railroad Bulletin*: (1) July 15, 1930 (pp. 219-20); (2) August 1, 1930 (pp. 229-30, 238); (3) August 15, 1930 (pp. 245-46, 252); and (4) September 1, 1930 (pp. 267-268).

W. J. Coughtry, in the first of his four articles ("Construction of the Delaware and Hudson Canal" W. J. Coughtry, Recorder) (July 15, 1930, p. 219-20), beautifully sets the scene in which Philip Hone's address was presented, as follows:

"One hundred and five years ago, on July 13, 1825, a large number of residents of Ulster, Sullivan and Orange counties, numerous visitors of prominence from other sections of New York and neighboring states, and the President and Managers of The Delaware and Hudson Company assembled in the quiet, little village of Rome, in the Mamakating Valley, Sullivan county, to witness the ceremony of breaking ground for the construction of the Delaware and Hudson canal, the first great work undertaken in the State of New York by private enterprise [emphasis added]. / At noon, upon the firing of a signal gun, a procession, composed of the Ulster Grays, a military company of Kingston, the canal engineering corps, led by Benjamin Wright, chief engineer, and John B. Jervis, assistant engineer [Wright and Jervis were both former Erie Canal engineers], the Board of Managers preceded by President Philip Hone, the clergy, the contractors on the canal, the visitors of prominence, and citizens of Ulster, Sullivan, and Orange counties, formed in front of Pine's tavern. /Headed by Colonel Gumare, of Sullivan county, and John Sudam, of Kingston, marshals, and the Sullivan and Kingston bands the procession moved down the Newburgh turnpike to the site on the line of the proposed summit level selected for the ceremony, accompanied by discharges of artillery. Arriving at the ground, where a platform had been erected, the music and the militia opened to the right and left, the latter presenting arms. With the playing of patriotic airs, the engineers, President Hone, the Managers, and the clergy ascended the platform, upon which was already seated a brilliant assemblage of ladies, and reviewed the procession, the members of which, after breaking ranks, surrounded the platform. / When the party occupying the platform was seated and the music ceased, a most profound silence of several minutes was followed by a prayer by the Reverend Mr. Kennedy pastor of the Methodist Episcopal Church. During this solemn silence amid the beautiful scenery of this charming valley it is said that the deep interest impressed upon every countenance while thousands of silent prayers were offered for the success of the enterprise made it a scene that was never erased from the memories of those who witnessed the ceremonies [emphasis added]. / Upon a signal from the marshals the bands played *Hail Columbia* as President Hone and Chief Engineer Wright left the platform and proceeded to a spot through which the chief engineer announced the canal must pass. Here the President, assisted by the engineers, broke ground for the construction of the canal by removing the first spade of earth. This ceremony completed, the party returned to the stand amid martial music and the applause of the onlookers."

Coughtry then presents the first part of Hone's speech as follows:

"When quiet was restored, President Hone arose and delivered the following address: In the present age of improvement when the capital, the enterprise, and the public spirit of the citizens of our happy republic are actively employed in developing its resources, unfolding its natural advantages and rendering operative all the blessings with which a kind providence has endowed it; undertakings, like that which has been this day commenced, become matters of ordinary occurrence; and an enterprise which a few years since would from its very magnitude, have been by some deemed chimerical, and the success of which would have been considered at least doubtful, by all is now viewed with little interest except by those immediately concerned in its accomplishment, and its projectors have less to hope from the applause which may crown their success, than to fear from the odium which is a natural consequence of a failure.

The state of New York enjoys the pre-eminence of having boldly taken up the line of march in the proud career of internal navigation. Our Schuylers and our Morrises, who first conceived the noble project of uniting the Great Lakes and the rivers with the ocean which bounds our territory, were not permitted to enjoy the successful accomplishment of their labours, but their precious legacy has been worthily improved by those to whom it descended, and the great design, opposed as it has been by the honest doubts of some and the unworthy prejudices of others, has succeeded beyond the most sanguine expectations of those whose fame and reputation were identified with its success.

Our state owns an unpayable debt of gratitude to the illustrious individual who is now at the head of its government and to his associates in the canal commission, for their unwearied exertions to carry into effect the measures adopted by successive legislatures, who less sanguine than themselves, were still disposed to give every facility to their operations; and the successful completion of the great Western and Northern Canals, while it attests to succeeding generations how much may be effected by public spirit and individual exertion, will serve to stimulate other sections of our country to similar efforts in the great work of internal improvement.' [end of Part I]

[Part II: August 1, 1930, pp. 229-30; 238)

‘The undertaking which has now been commenced does not claim an equal share of consideration with that to which I have just adverted; but when viewed as the work of individuals associated under the sanction of the state, but deriving no support from its funds, and when the great and important consequences which cannot fail to result from it are fairly considered, we feel assured that the public will give us the benefit of their good wishes, and contribute at least a friendly ‘God speed ye’ to a work which, if successful, must increase the prosperity and rebound to the glory of the state. But from you, citizens of Orange, Sullivan and Ulster, we have a right to expect something more; and judging by the friendly co-operation and support which many of you have hitherto afforded us, we have no apprehension that our expectations will be disappointed. We are preparing to open for you the means of communication with a sister state rich in the production of the soil and possessing an inexhaustible supply of coal, which, from its situation and the imperfect navigation of the rivers, is of little more value than the rich gems, which ‘the dark, unfathomed caves of ocean bear.’ The products of your own farms, and the timbers of your own forests will also be increased in value to an amount incalculable by the facilities which will be afforded to you of conveying them, with little labor and expense, to a market always calling for supplies and never supplied. But in the prosecution of this work we have many difficulties to encounter, many obstacles to remove, and although, from recent experience, it has been found that the talents and industry of our countrymen is sufficient to overcome them all, yet we may be allowed to say in the language of an accomplished orator of a sister state, who saw all the difficulties while he expatiated on the advantages of such an enterprise. ‘To accomplish all these objects, man raises the valley, levels the hill, diverts the stream, perforates the mountain, he leads the river in unaccustomed channels and the bird of the air views the white sail of commerce usurping her accustomed haunts.’

We look then, with confidence, to your support, interested as you are in the success of this scheme, let it not be impeded or frustrated by obstacles which your friendly zeal may remove; we have already experienced the liberality of a large proportion of the inhabitants on the line of the canal, in gratuitously surrendering their lands for our use; let there be no exceptions, for where all are benefited it is not unreasonable to expect that all will contribute [emphasis added].

'The Delaware and Hudson Canal Company owes its origin to an act of the Legislature of Pennsylvania, passed 13th March 1823, granting to certain of its citizens the right to construct a canal from the head waters of the Lackawaxen to the Delaware River. The principal object of which was, the transportation of coal known to abound in the counties of Wayne and Luzerne, near the head waters of the former stream in immense quantities; and of a quality equal at least to any which has been heretofore imported from foreign countries.

The legislature of New York perceiving at once the advantages to be derived from a participation by our citizens in a commerce so advantageous and profitable, incorporated by their act of 23rd April, 1823, the Delaware and Hudson Canal Company, which was authorized to receive from the Pennsylvania Company, a transfer of their property and rights, and to continue the line of slack water navigation from the Delaware through our own state to the Hudson River, at any point which the managers might deem most advantageous. Since the passage of the first act, the legislature has manifested their good intentions towards the company by granting them in aid of their undertaking, the privilege of employing a proportion of their capital in banking operations in the city of New York. The confidence of the public was evinced by the stock being immediately taken up.

A board of managers was elected from among the stockholders, and the institution organized with promptness and spirit under their auspices. Our first object has been to employ the best talents in the engineering department, and we have been peculiarly fortunate in our selection. The gentleman at the head of that department unites with professional talents of the highest grade, sound judgment and discretion, which enables us to rely with confidence on his opinions; and his associates, educated in their profession under his guidance, bring to the aid of our undertaking the benefit of experience obtained in the construction of the western and northern canals, in which they have been employed with credit to themselves and benefit to the state.

The board of managers has had some difficulty to contend with in the commencement of their labours in the selection of a proper route for the projected canal from the Delaware to the Hudson, arising from the conflicting claims of those persons who, residing and owning lands on the east and on the west side of the Shawangunk Mountains, were accustomed to take only that view of the question in which their individual interest led them insensibly to see all the advantages, and to overlook difficulties and obstacles, more apparent to indifferent observers.

The engineers were instructed to survey and explore both routes with the most scrupulous attention, and to report to the board that location which would combine with the greatest share of benefit to the company and to the community at large, the most economical expenditure of the funds intrusted to the care of the managers. This survey was accomplished, and resulted in an elaborate and able report of Judge Wright, the chief engineer, which, after a personal inspection of the whole line by a committee of the board, was unanimously adopted, and it was determined to adhere to the original plan of terminating the canal at a point on the Hudson River, at or near the village of Kingston, in Ulster County. The following extracts from Judge Wright's report, may serve to explain some of the grounds on which we have come to a decision so important, and which, although productive of disappointment to some of our friends in the county of Orange, will, we are confident, be ultimately approved of by all.

In pursuance of your instructions requesting me to explain the several proposed routes for the contemplated Delaware and Hudson Canal, in company with Mr. Jervis, the assistant engineer, and examine critically the feasibility and outline of the expense, and more particularly on which of the several routes (if they were all practicable) it was for the general benefit of the country, and for the interest of the company to locate their line of canal.

Two general routes have been suggested, both following the Lackawaxen and Delaware Rivers to Saw-Mill Rift; four miles above Carpenters Point, and thence deviating, one following up the valley of the Neversink, and down the valley of the Rondout to tide water, near Eddy's Factory. The other following from Saw-Mill Rift down the Delaware to some proper point to gain the valley of Pawlings-Kill or Wall-Kill, and thence making as direct a course as the formation of the country would permit through Orange County, and debouch into the Hudson at or near Newburgh, a fine flourishing village.

'Several different plans, varying from this general outline, have been suggested to locate the line of the latter route, all however, tending to debouch at or near the same point in the Hudson River. I shall therefore describe the routes of the Ulster and Orange routes. The Ulster route having been examined in 1823, by Col. Sullivan and Mr. Mills, and their report being before the Board, I shall give my examinations of both these routes, having never before seen either personally. And first of the Orange route, we proceeded from Newburgh down the bank of the Hudson four miles, to the mouth of Murdeners creek, and thence passed up the valley of this stream to the Otter Hill, a branch or tributary, and then following up the Otter Hill and its waters, we found a low dividing ridge between these waters and the Wallkill, although no level had been taken at this point, it was easy to see that no formidable difficulties existed in leaving the valley of the Wallkill, and gaining the country which declined eastward toward the Hudson. [end of Part II]

[Part III: August 15, 1930, pp. 245-46, 252]

The next examination was to the dividing ridge, between the valley of the Wallkill and the Shawangunkill, in order to see if by tunneling the Shawangunk mountain, we could gain the valley of the Neversink. We therefore pursued up a stream which rises near, and runs through the Bull-Hach Meadows. We found that a level to suit this dividing ridge and pass through the mountain, must be 623 feet above tide water, and on this level the tunnel would be in the shortest place, two miles and ten chains, or 3740 yards, there would also be an embankment to get over the Neversink valley, which to form would require between three and four million cubic yards.'

After enumerating the several items of expense required to form this tunnel, the aggregate of which is $1,380,000, the report very properly concludes by saying: 'This plan ought therefore to be abandoned.'

Another route for tunneling the mountain at Reynold's Gap having been surveyed, was found to be still more exceptionable, and, of course the project was rejected.

The report then proceeds:

'It has been represented as possible, to pass the mountain at a place called Culver's Gap. Mr. Jervis had examined it personally, and Mr. Mills had brought a level upon it. The plan that appeared most likely to succeed was to follow down the Delaware, from Saw-Mill Rift to near Carpenter's Point, pass over the Neversink River and up the valley called the 'Clove,' to its termination, and thence following the high ground along the side of the mountain about eight miles to Culver's Gap. Upon the top of this Gap or near the top, nature has located two ponds called Long Pond and Culver's Pond; these are to give feeding water at all times. Mr. Mills found the surface of the lowest of these ponds to be 851 feet above tide water, and 397 feet above the Delaware River, at Saw-Mill Rift.'

Comparing this with the Ulster route, the difference of expense was found to be so great as to leave no doubt of the propriety of rejecting it. These are some of the reasons which have influenced the board of managers in the location of a route for the canal, the very able report from which have made the foregoing extracts, embraces a variety of subject of great interest, and I would be highly gratified, on the present occasion, in laying the whole before you, but I have already trespassed so far on your time and patience, that I shall only allow myself to notice one other point of considerable importance, and the interest which we persuade ourselves, you take in our concern, forbids me from making an apology for its introduction.

Apprehensions have existed in the minds of some of our friends, that the spirit of enterprise which pervades every part of our country, may lead to the construction of rival works, operating to our prejudice, by diverting into other channels the revenue which we anticipate as the reward of our labours. On this head the report is full and entirely satisfactory.

Judge Wright says: 'Many persons have believed that the interests of the Delaware and Hudson Canal Company ought to be united, and merged in the Orange and Sussex Canal Company, and prevent what they call a rival work.

'The formation of the country, already designates that the route of the Orange and Sussex Canal, if made, must pass up the valley of the Wallkill, and down the valley of Pawling's Kill to Columbia on the Delaware River. This point is about twenty miles from Easton, on the mouth of the Lehigh; and should the Delaware and Hudson Canal Company make their Canal down the Delaware River, to Columbia, fifty miles from Carpenter's Point, and then take the valley of Pawling's Kill and thence up that, and thence to Newburgh, it would increase the length of the canal at least fifty miles, and make three hundred and twenty-five feet more lockage than the Ulster route.

Upon a full, and to me, satisfactory examination of the several proposed plans for the route of the Delaware and Hudson Canal, I am fully convinced that the best route and the one most for the interest of the company to pursue is, what I have called the Ulster route. A question then arises: Can there be any route of a canal projected and executed, which will directly or indirectly become a rival in the transportation of coal from the Lockawannock valley or the products of the soil? I answer that a birds-eye view of the formation of the country, between the Lehigh and Lackawaxen River, forbids the location of any canal which can in the least injure the interest of this route.'

The report of the chief engineer is satisfactory in all respects, and fully calculated to justify our most sanguine anticipations of success. The original survey and report to the commissioners which was executed with great ability by Colonel Sullivan, has been found so correct as to form the ground work of the plan, but it is determined to extend the size of the canal in the state of New York to substitute a more durable material for the locks, and to make an independent canal up the Delaware River, and in the state of Pennsylvania, to the head waters of the Lackawaxen. The important deviations from the original plan will increase the expense of the whole work about $400,000, but we apprehend no difficulty in raising the funds required, and we lack neither inclination nor ability to commence the work with spirit and prosecute it with ardor and perseverance.

Contracts have been entered into for excavation and locks on a considerable portion of the line, and the peaceful and beautiful valley in which I have now the honor of addressing you, will soon be the scene of active and vigorous operations. The hardy arm of labour directed by science and professional experience, will be employed in rendering the bounteous gifts of nature, subservient to the improvement of art.

The citizens of our state and those of the state of Pennsylvania, will be convinced that the privileges granted by their respective Legislatures, are not intended to be merely employed as objects of interested speculation, and that the proud character which New York has obtained in works of internal improvement and public utility, is in no danger of being tarnished by the operations of the Delaware and Hudson Canal Company."

Following the tremendous applause which is said to have made 'the welkin ring,' and prayer by the Reverend Mr. Murphy, of Rochester, Ulster County, the procession reformed and returned to Rome, disbanding at the inn of Captain Peter Miller. / The ceremonies were concluded with a dinner at half past two that afternoon in a bower immediately adjoining the summit level, at which about two hundred guests were present. President Hone presided, assisted by David Hunter of Sullivan, and Charles H. Ruggles and John Sudam, of Ulster county as vice-presidents. . ." [On 07-20-2011, we learned, at a meeting of the Delaware and Hudson Transportation Heritage Council, that Captain Peter Miller's is now "Danny's" at the four corners in Wurtsboro.]

The dinner concluded with the drinking of many toasts—among them the following: / The Delaware and Hudson canal—Posterity will celebrate the anniversary of its commencement as a new era in the history of improvement. / The legislature of the state of New York—to whose liberality and enlightened policy the citizens of Orange, Sullivan and Ulster, are indebted for the canal, the commencement of which we this day celebrate. / The state of Pennsylvania—willing that the Delaware and the Hudson should shake hands, may she be as prosperous as she is great and magnanimous the cause of internal improvement throughout the union; the union of the states, cemented by works like this—it will be imperishable. / By John Sudam, esq., vice-president. The president and orator of the day—his enlightened judgment has enabled him to appreciate the advantages of the Delaware and Hudson canal; his name his given to Ulster and Sullivan a strong arm in completing it. / (Mr. Hone here rose and thanked the company in a feeling and appropriate manner, for the honor this day conferred on him.) / By David Hunter, esq., vice president. New York and Pennsylvania, twin sisters of the republic, may their common efforts produce internal wealth for themselves, and external strength for their country. / By Charles H. Ruggles, esq., vice president. The health of a citizen of a sister state, Maurice Wurts, esq. whose mind first conceived the project of the Delaware and Hudson canal, [emphasis added] and whose ardor and perseverance has brought the work to an auspicious commencement." [end of Part III]

The last article in this four-part series [September 1, 1930, pp. 267-68] contains much interesting data about the canal. Here is the text of that article:

"Two other celebrations followed [the ground breaking on July 13, 1825], the first on September 2, 1826, when the keystone was placed in the aqueduct across the Rondout at High Falls, and the other on November 25, 1826, when a perfect Ashlar was laid in the wall of the tidewater lock at Eddyville, marking the completion of the canal between the Hudson and Delaware rivers, both of which were laid with Masonic ceremony and were followed by banquets. / At the latter celebration the participants boarded the *Morning Star* at Kingston which proceeded up the Rondout to Eddyville where she entered the tidewater lock to the roar of cannon. As the water was let in the lock she rose majestically beneath an arch of evergreens to the level of the canal amid the cheers of the spectators. Here President Bolton, Chief Engineer Jervis, and a party of ladies and gentlemen embarked. A tow-line was attached to the boat and two horses 'gorgeously caparisoned' drew her rapidly out of the lock. Followed by two scows the *Morning Star* proceeded up the canal through the first and second levels and thence up the Rondout to the 'Stone House,' at the mouth of the Greenkill, where the party landed. Here a procession formed and marched down the tow path to the tidewater lock where the ashlar, properly inscribed, was set in place. / After the ceremony the party re-embarked on the *Morning Star* and the scows, which had returned to receive them, and again set out on the canal. As the boats passed up the canal and the Rondout, exhibiting to the wondering spectators a novel and interesting mode of transportation, many kept pace with the craft seizing the tow lines to relieve the horses and

affording every facility to their continued progress. / The voyage terminated at the third and fourth locks. Returning to the Stone House the party disembarked and were served with ‘an elegant cold collation.’ At the close of the repast many toasts were drunk, after which the party again boarded the boats and returned to Kingston. / The canal from Hudson to the Delaware was filled with water shortly after this celebration and again in the spring of 1827 for the purpose of saturating the banks and allowing them to settle. / The first recorded navigation was an experimental trip of the *Neversink* from the summit level to tidewater at Eddyville, a distance of forty miles, where she arrived on the morning of July 27, 1827, ‘without having encountered a single accident, or being detained a single moment by obstructions on the route.’ Her passage through the stone aqueduct at High Falls was witnessed by Hon. Nathan Sanford, of the United States Senate, and President Bolton who ‘were highly gratified with a short passage on the canal.’ / The first recorded commercial transit was a raft containing 20,000 feet of white pine boards from Warwarsing, which arrived at Kingston September 15, 1827. The first report of ‘Canal Commerce,’ furnished by the collector at Eddyville, announced the clearance into the canal from October 25 to 30, of 6 boats and the arrival, from October 26 to 30, of 8 boats, 3 from Rosendale, and one each from Warwarsing, Beattysburg, Ellenville, Marbleton and Waagendall. Their cargoes consisted chiefly of cord wood, lumber, staves, and leather. / The dates of completion of the canal from the Delaware River to Honesdale do not appear of record. As soon as water could be maintained on a section it was let in and the canal used for haulage of materials, scows being used. Water was let in the Delaware section at the Mongaup feeder in August, 1828, and from the Delaware river about the middle of September. On the Lackawaxen section water was let in at Brinks, at the Narrows, and at Honesdale early in September and the remaining feeders were opened on October 9. In a letter to the Senate and Assembly, dated October 10, l828, Philip Hone advised them that the canal had been completed, that it would be ready for navigation on the whole line in the course of the ensuing week, and requested the appointment of committees to accompany, with the managers of the company, the first boats loaded with coal that would pass through the canal. This invitation was not accepted, the rules under which both branches of the legislature then operated failing to permit such participation. / The completed canal was formally opened on October 16, 1828, when the Orange Packet, with a party of Managers, left Rondout for Honesdale. The Managers upon their arrival were given a public reception by the citizens. This packet and the canal boats accompanying it were the first to navigate the canal for its entire length. / The canal when completed was one hundred and eight miles long, thirty-two to thirty-six feet wide at the water line, twenty feet wide at the bottom, and the minimum depth of water was four feet, affording capacity for boats carrying cargoes of not more than thirty tons. It was carried across the Rondout on a stone aqueduct supported by two arches, across the Neversink and smaller streams by wooden trunks on stone piers an abutments and across the Delaware by means of a dam and slack water and it was spanned by one hundred and thirty-seven bridges. From tidewater the canal ascended for thirty-five miles; then its course was level for slightly more than sixteen miles. It then descended fifty-eight feet and rose again

thirty feet, all in Orange County, and re-entering Sullivan County ascended steadily for the remainder of the distance in New York. After entering Pennsylvania it ascended continuously to Honesdale, where its altitude was nine hundred and seventy-two and one-half feet. These ascents and descents were accomplished by means of one hundred and ten locks having lifts ranging from eight to twelve feet, the average being ten feet. These locks were seventy-six feet long and nine feet wide. / An account of the passage of the first cargoes of anthracite through the canal and of the operations of that artificial waterway up to its abandonment at the close of the season of navigation in 1898 was published in the *Bulletin* of December 15, 1928. / Although but a vestige of this once great artificial waterway remains it will long be remembered as one of the greatest pioneering enterprises of our country." [end of Part IV]

Three D&H Canal Notes:

1. Formal Opening of D&H Canal

"The completed canal was formally opened on October 16, 1828, when the *Orange Packet*, with a party of managers, left Rondout for Honesdale. The managers upon their arrival were given a public reception by the citizens. This packet and the canal boats accompanying it were the first to navigate the canal for its entire length." *(Coughtry*, Part IV, September 1, 1930, p. 268),

2. Exit Philip Hone and Benjamin Wright

During the 3-year period of construction of the Canal (1825-1828), two highly important D&H figures during the crucial early years of the D&H went on to other areas of endeavor: Philip Hone, named Mayor of New York in 1825, resigned as President; Benjamin Wright, resigned as Chief Engineer to devote his energies to the four other canals he was then working on. He named John Jervis to replace him in March 1827.

3. Enter John Jervis

John Jervis was working on the family farm and sawmill in Rome, NY, in 1817, when the construction of the Erie Canal began. He got a job on the Erie Canal, first as a tree cutter, then as a rodman in a surveying crew, then as a surveyor, then Resident Engineer on a 17-mile section in the middle of the canal. When asked by Benjamin Wright to come work on the D&H Canal in 1825, Jervis was Superintendent Engineer for an entire division of the Erie Canal. The D&H Gravity Railroad that opened on October 9, 1829 in Carbondale was designed by John Jervis.

6015

Thomas Dickson: World Traveler, Lecturer, Trip of Scotland, Death

Speaking of Thomas Dickson's health in the first half of his life, Samuel C. Logan, in his *The Life of Thomas Dickson, A Memorial* (Scranton, PA, 1888), states (p. 92):

"Through the first half of his life he was blessed with almost uniform good health, and certainly had great powers of endurance. A staid and indefatigable worker, his life-long habit of spicing his labors with the luxury of his fun seems to have rendered his business life uniformly pleasant and healthful. He was able to pass from outdoor activity to office confinement with the smallest appearance of friction, and he never seemed to carry about him any nervous anxiety or bustle of business. His powers of endurance and general good health seem to have educated him to the neglect of any special care of himself in this matter. The multiplicity of his business, the hardness of the work, and the dangers of exposure seem to have been seldom thought of by him as elements to be considered in his decisions concerning the demands of duty. The buoyancy of his nature and adaptability of his physical manhood, which we might call his nervous force, continued with few interruptions, down to the beginning of the year 1863, when approaching his fortieth year."

In early 1863, at a time when he was in a condition of physical exhaustion and mental weariness, in fulfilling his duties as Superintendent of the D&H Coal Department, he was called upon "to aid in the perplexities of public affairs which were incident to that period of the war" *(Logan,* p. 93) by attending a council of patriots in New York. In journeying there, via the DL&W and the Erie, he was exposed to a group of Confederate prisoners, one or more of whom, it seems likely had small pox. He attended the meeting in New York, and returned home, exhausted and with a fever, which quickly developed into a case of small pox.

Logan (pp. 92-94) describes this period in Thomas Dickson's life as follows:

"In the early part of January of that year [1863], he was driven and weighted with more than his ordinary business. In addition to the care of the rapidly increasing responsibilities of the great company, of which he was the chief factor [In 1860, he was named Superintendent of the D&H Coal Department; in 1864, he was named General Superintendent of the Delaware and Hudson Canal Company; in 1866, he was elected Vice President of the D&H; in 1869, he was elected President of the D&H.], he was called upon by public officials and by citizens generally, to aid in the perplexities of public affairs which were incident to that period of the war. During the whole four years of struggle and sorrow in the country he never declined any service which the exigencies seemed to require of him, whether of council or sacrifice. At a time when he was in a condition of physical exhaustion and mental weariness he was suddenly called from his home to a council of patriots in New York. Taking the Delaware, Lackawanna and Western Railroad to Great Bend, he entered a train on the Erie road late at night, and, without observing his surroundings, sat himself down among a crowd of Confederate prisoners that had been captured in Virginia. This was just after the great battle of Fredericksburg. Here in his weariness he fell asleep, without thought or care of his fellow-passengers. As soon as he was discovered by the conductor of the train he was hurried into another car; but it was too late to escape the con-

sequences of his exposure [to small pox]. He pushed his business through in New York, and returned home with all speed and without rest, but he came from his second night's travel with a fever which in a few days developed a genuine case of small-pox, which converted his beautiful home, for a time, into a pest-house, in which his wife was established in all of the offices of nurse, steward, and cook. After the regular process of the disease he came forth with few external signs of the plague, but with a grasp of the disease about the valves of his heart, from which he was never afterward entirely free."

He resumed his work with the D&H but he was not, physically, the same man. We read in *Logan* (p. 94), the following:

"He suffered from painful and strange attacks of exhaustion, shortness of breath, and sensations of brain confusion, which to his wife and family became alarming. These attacks were not particularly violent, and they were at long intervals, which perhaps became the more wearing on his general health and spirits from the mystery of their cause This cause was only fully and clearly revealed after his death, twenty-one years after the first appearance of the symptoms. It was the slow and very gradual ossification of some of the valves of the heart. It was so slow and gradual, that for at least ten of the twenty years he lived after this siege with the small pox, he did not think of himself as really out of health. But his great labors gradually told upon his strength and elasticity, as became apparent to his best friends. He was observed to use his carriage more frequently, and when he walked he manifested a deliberation and dignity of carriage which could hardly be supposed to be the signs of approaching old age. Yet these things gave no suggestion of real disease. His responsibilities, with the confinement incident to his business, after a few years began visibly to wear upon his health."

Following the advice of friends, he decided to take time off from the D&H, to travel and to rest. With a year's leave of absence from the D&H, he determined that, together with his wife, he would tour entirely around the world.

Trip around the World, September 1871-August 1872:

From September 1871 to the end of August of the following year, Thomas Dickson and his wife, nee Mary Augusta Marvine (daughter of Roswell E. Marvine and Sophia Raymond; married Thomas Dickson on August 31, 1846; she was barely 21 and he not yet 23) traveled around the world for the benefit Thomas Dickson's hearth.

In the *Carbondale Advance* of August 12, 1871, p. 3, we read:

“Around the World. / We learn that Thomas Dickson, Esq., President of the Del. & Hud. C. Co., and his wife, expect to start on their long contemplated trip ‘around the world,’ about the middle of the present month. They propose to go across the Continent to San Francisco, thence to

China, where they have a son residing, and with whom they will spend some time, and return through Asia and Europe, completing the circuit of this terrestrial globe. Mr. Dickson has leave of absence for a year. We wish them a safe and prosperous [trip]."

Prior to their departure on their world tour, the Dicksons hosted a grand reception at their residence in Scranton, at the corner of Washington Avenue and Vine Street.

"The Great Social Event. / The special social event of the week is the grand reception, to be given by Thos. Dickson, esq., President of the Del. & Hud. C. Co., and Lady, at their residence in Scranton, on this (Thursday) evening—just previous to their leaving home on a trip to China and thence around the world. It will doubtless surpass in magnificence, and the perfection of the arrangements for the comfort and pleasure of the guests, anything seen in Northern Pennsylvania." *(Carbondale Advance,* September 2, 1871, p.3)

The world tour is described by *Logan* (pp. 96-97) as follows:

"About the first of September, 1871, Mr. Dickson left his home in Scranton thus accompanied by his wife, going westward o make this tour of the world. On the 24th of that month they arrived at San Francisco, and sailed from that port in the steamship 'Republic,' on the 28th, for the port of Japan and from thence to Hong-Kong. In China Mr. and Mrs. Dickson were joined by their son, who journeyed with them and returned home with them to remain. They passed through the chief countries of Asia. They traveled through Syria and Palestine on horse-back. They climbed the pyramids of Egypt, and sailed up and down the Nile together. They threaded the narrow channels of the historic islands of the Mediterranean, sailed along the borders of Asia Minor, and thence back through the islands of Greece into Italy. Here they met friends from home and wit them made the tour of Europe, using every sort of conveyance. They passed through Italy and climbed the mountain passes of Switzerland. They drove through Germany, stopping to drink life-waters from the medicinal fountains. They looked into the gay life Paris and he more substantial one of London, and then passed northerly through England, and reveled among the historic hills and valleys of Scotland, in midsummer. They visited all the points which had been deemed sacred around the fireside of the emigrants in the far-off country, and traced the foot-prints of their fathers through Scotland and northern England; thence they passed into Ireland to visit what Mr. Dickson calls 'the land where my masters come from,'—referring to the great number of Irish laborers it had been his life-work to employ and to serve. The tour of Scotland, Ireland, and England was completed toward the end of August, when they sailed from Liverpool on the homeward voyage. They arrived safely at home on the 27th day of August; thus having encircled the earth in just about the space of one year."

The arrival of the Dicksons back in Scranton was noted in the August 31, 1872 issue (p. 3) of the *Carbondale Leader,* as follows:

“Mr. and Mrs. Thomas Dickson and their son James arrived in New York Wednesday morning, in good health. During their absence of nearly a year, and their journey extending around the world, the only occurrences to cause them sadness, was the presence of Mr. Dickson at the death-bed of Col. Scranton, and the death of a beloved sister, (Mrs. Wilber, of Honesdale), who was in perfect health when they last separated. Many friends of Mr. and Mrs. Dickson went down to meet them on their arrival at Scranton on Thursday.”

Throughout this tour of the world, Thomas Dickson wrote letters home to family and relatives. Some of those letters were shared by their recipients with Carbondale newspapers, which reported in their papers on the progress of the Dicksons' world tour. In the May 18, 1872 issue of the *Carbondale Advance* (p. 3), we read:

“Disappointment. / Messrs. Dickson and Clarkson, whose proposed trip to Scotland, in accordance with a long cherished intention, we have mentioned, have been obliged to forego the pleasure for the present on account of the poor health of Mr. Clarkson. They had intended to sail to-day.”

And in the August 3, 1872 issue of the *Carbondale Advance* (p. 3), we read:

“At Melrose, Scotland. / At latest date, July 14th, THOMAS DICKSON, Esq., and family, were at Melrose, Scotland. They were to leave soon for Edinburgh, and expect to take homeward passage, as before stated, on the 17th inst.”

These letters home from Thomas Dickson are described by *Logan* (pp. 97-98) as follows:

"From the start, he [Thomas Dickson] adopted the plan of letter-writing to his family and relatives at home, giving thereby an accurate account of his travels and impressions. These letters were forwarded with business regularity, containing accurate pictures of the lands they visited; but among them, ever visible was the unconsciously-drawn picture of the traveler himself. They were written in all manner of straits and with every conceivable inconvenience, but they were masterpieces of personal correspondence. These letters were preserved, and afterward collected and bound in a book constituting 276 pages, foolscap size. They were never intended for publication, but they remain a family souvenir, containing a great amount of knowledge and many marks of literary ability, as well as of an accurate observation."

One can not help but wonder if this 276-page volume of Thomas Dickson's letters home from his world tour of 1871-1872 still exist.

In the years following this tour of the world, Thomas Dickson presented public lectures, the subjects of which were various portions of his world tour.

In the March 1, 1873 issue (p. 3) of the *Carbondale Leader,* there is a notice about a lecture that Thomas Dickson gave in February 1873 in Scranton. Two hundred and fifty people from Carbondale took the train to Scranton to here the lecture.

“About two hundred and fifty people of this city [Carbondale] went to Scranton on Tuesday evening to attend Mr. Dickson’s lecture.”

From that same issue of the *Carbondale Leader,* we learn that "a good many young men" from Carbondale took advantage of the low fare offered by the D&H to those who wished to attend Thomas Dickson's lecture and went to Scranton, not to attend Thomas Dickson's lecture, but to attend other kinds of presentations:

“A good many of our economical young men took advantage of the low rates of fare on Tuesday evening, and instead of going to hear Mr. Dickson’s lecture, attended the Varieties.” *(Carbondale Leader,* March 1, 1873, p. 3)

Enterprising. Amusing. Young men will be young men.

In November, 1874, Thomas Dickson, "a lecturer of decided abilities," presented a lecture, titled "What I Saw in India," to the "nearly filled spacious opera-house" in Scranton. The lecture was a benefit for the Y. M. C. A.

“Mr. Dickson’s Lecture. / The lecture entitled ‘What I saw in India,’ delivered by the able president of the Delaware & Hudson Canal Co., at the Scranton Opera House on Thursday evening, was a most happy success, both for the Y. M. C. A., in whose interest it was delivered, and for the worthy speaker, who has convinced the public that he is a lecturer of decided abilities. The friends of the association and the lecturer, from this city, Honesdale, Providence, Wilkes-Barre, Pittston, Scranton and intermediate places, nearly filled the spacious opera-house. The lecturer facetiously introduced himself and his subject, and then proceeded to give a minute and entertaining account of the cities, town, ruins, mosques, and wealth of that wonderful country, the population of which is 180,000,000. The tales he told of the splendors of the tombs and shrines, and the magnificence of some of the residences, seemed like some fairy dream. He said that the population; of the country is so great and labor so cheap, that no effort has been made to introduce labor-saving machinery. Labor brings from $2.50 to $5.00 per month. A half-

pint of rice daily furnishes all the food the poorer class receive, per capita. The country contains 10,000 Europeans, who are the controlling class, and 200,000 Mohammedans. The balance of the population are considered outcasts; but the speaker believed the time would come when the millions of India would be redeemed and rejoice in the light afforded by the glorious gospel of Jesus. This richest and fairest of lands upon God's footstool, is very slowly but steadily progressing in the direction indicated. The lecture was interlarded with many amusing anecdotes, and was listened to throughout with profound attention." *(Carbondale Advance,* November 21, 1874, p. 3)

In December, 1874, Thomas Dickson delivered a lecture "to the largest house of the season" in Nealon's Hall, Carbondale, to benefit the Young Men's Library Association:

"The Lecture. / The "largest house of the season" greeted Mr. Dickson at Nealon's Hall last night—Wednesday. Every seat was filled and every person in attendance seemed delighted with the lecture, which abounded with descriptive eloquence, wit, pathos and sentiment. The lecture was also a great pecuniary success to the Young Men's Library Association. Not only this association, but our citizens generally, who were in attendance, thank Mr. Dickson for his lecture." (Carbondale Advance, December 26, 1874, p. 3)

In May, 1875, Thomas Dickson spoke in Hyde Park, Scranton, for the benefit of the Presbyterian Church:

"We see it announced that Thos. Dickson, Esq., will lecture at Hyde Park this (Friday) evening, for the benefit of the Presbyterian Church." *(Carbondale Advance,* May 1, 1875, p. 3)

In January, 1878, Thomas Dickson presented "an intelligible [possibly "intelligent" was intended], eloquent, and interesting description of India, as seen by himself in Carbondale's Methodist church, "which was well filled, by an intelligent and appreciative audience":

"Lecture of Mr. Dickson. / Notwithstanding the very unfavorable state of the weather last Tuesday evening, the M. E. Church was well filled, by an intelligent and appreciative audience, to listen to Mr. Dickson. A few minutes was devoted to singing, after which the speaker was introduced by Rev. Mr. Shelland. He commenced with an amusing incident, which brought down the house, and then proceeded to give an intelligible, eloquent, and interesting description of India, as seen by himself, taking up in detail, the different places through which he passed, giving a vivid description of all that was worth seeing and admiring, interspersed with occasional humorous anecdotes, which kept the audience in constant good humor. Mr. Dickson, by this lecture, has added to his already enviable reputation as a lecturer, and we hope the day is not far distant when we may have the pleasure of listening to him again." *(Carbondale Leader,* January 20, 1878, p. 3)

In December, 1879, he lectured on "Syria and Palestine" in the Ross Street Methodist Episcopal church in Wilkes-Barre for the benefit of the church. This was a lecture that he had previously delivered in Carbondale:

"MR. THOMAS DICKSON AS A LECTURER. / Mr. Thomas Dickson is to deliver his lecture on 'Syria and Palestine' in the Ross street M. E. church, Wilkes-Barre, on the evening of the 19th inst. Our own people have had the pleasure of hearing this entertaining and instructive lecture. It is delivered not only gratis for benevolent objects, but Mr. Dickson always insists on paying the admission fee. His literary efforts are highly creditable to him, as well as the means of drawing many dollars into the treasury of churches and benevolent institutions throughout a wide extent of country. If 'corporations have no souls,' it cannot be said of the highest officer of one of the greatest of them." *(Carbondale Leader,* December 13, 1879, p. 2)

Thomas Dickson continued to serve the D&H, but it became more and more difficult for him to do so as the years passed. In the spring of 1882,* at the urging of family and friends and for the benefit of his health, Thomas Dickson and family again traveled abroad for three months, this time to England, Scotland, and the European continent.

> *Logan is mistaken when he says (p. 103) that this second trip abroad took place in 1883, as the Thomas Dickson letters given below, published in the *Carbondale Advance* during the summer of 1882 make clear.

The Dicksons sailed for Europe in early May 1882 and returned that autumn.

Four of the letters that Thomas Dickson wrote home to his sister, Mrs. A. Watt, in Carbondale, were published in the *Carbondale Advance.*

The first from **Disentiser Hof, Disentis, Switzerland, July 20, 1882.**

The second from **Regent's Hotel, / Leamington, Aug. 8, 1882.**

"Letters from President Dickson. / It is known to many of our readers that Thomas Dickson, Esq., President of the D. & H. C. Co. is spending the season in Europe with his family. He makes this very interesting to his friends, by his frequent and valuable letters. His descriptive powers are of the highest order, and seldom equaled. Through the courtesy of Mr. and Mrs. A. Watt, the two following letters handed us for perusal, we are permitted to place in our columns, being sure that they will interest our readers: / **Disentiser Hof, Disentis, Switzerland, July 20, 1882. /** *My Dear Sister:* I believe I wrote you last a Vienna, since which we have had a letter from you, which Mary answered last Sunday. From Vienna we came to Berlin, Dresden, Amsterdam and the Hague; from there to Baden Baden, where we met the Ballantines, and you may be sure we had a pleasant time with them. You have no idea how pleasant it is to meet acquaintances in a foreign land, particularly when you are where you do not understand the language, and have been listening to jargon for weeks. Baden awakened the recollection of unpleasant experiences, for here I closed the eyes in death of my friend, Mr. Scranton. We left Baden on Monday a. m. for Schaffhausen and the falls of the Rhine, and from thence to Ragatz, by the shores of the beautiful Lake Constance, stopping at Constance, where we had the pleasure of again meeting the Westons. At Ragatz we made our arrangements for a visit to the Engadirn, and secured a coach and four horses for a period of eight days. It is a little expensive, but is the only way to see this portion of Switzerland. We commenced the ascent of the Alvanni Pass from the little village of Cori, and spent the first night at a good hotel in the Alvanni valley. The roads, as you may know, are all macadamized, and are as smooth as a parlor floor, and when the weather is good, as it has been with us, the ride is really charming. I will not attempt to describe the grandeur and beauty of the scenery through which we have passed during the last few days, for I should have said that we have come through the Passes of Alvanni, Albula, Irshir and little Ober-Alp, and that to-morrow we cross the Great Ober-Alp. Suffice it to say that the scenery is peculiar to Switzerland, for in a few hours you can pass through a country teeming with the abundance of luxuriant vegetation, almost tropical in its rankness, to a region of barrenness and desolation, where not a spear of grass or a blade of vegetation presents itself to the vision, where the silence is painful, and where perpetual snow reigns supreme. Then, as if by enchantment, a short hour, and you are again amid the profusion of an Alpine Summer. You would be surprised at the height that many of the cottages are placed upon the steep sides of the mountains, and you wonder how the people ever get there. Indeed, it is only by a zig-zag course they can do so. Yet

here hundreds and thousands of people are born, live and die; and so fond are they of their mountain life that but few ever emigrate. They are a very industrious people, and the women do quite as much work as the men; indeed, the fields at this season are crowded with women and children, securing the harvest, and making ready for the long winter. While to me it seems a poor use to make of women, yet the season for securing the crops is so short that it becomes a necessity there. I suppose that after all is made secure, and the winter is provided for, all hands take it easy, as nothing can be done out of doors. The habits of economy of this people is something wonderful, and would amaze those who are accustomed to ordinary farm life in America. Not a thing is wasted; every weed and leaf is carefully gathered and husbanded for the purposes of manure, and the droppings upon the public roads are carefully secured to the same end. Every stick and twig, however small, is taken care of, tied in bundles, and put away for future use. Then, in the use of fuel they are equally careful, using all kinds of appliances for the radiation of heat, so that none shall go off without having done service. Their stoves are a marvel, are generally made of porcelain, and look more like monuments to departed worth than contrivances for the use of the living. The night we spent at Simplon, we occupied a room which had one of these monumental stoves, and Mary insisted that they had placed us in a vault, where some dead members of the family were deposited, and it was only after its use had been explained that she became reconciled. Again, in the sleeping arrangements they reverse the order of things, and place a feather bed on top of you. I confess it went against the grain with me at first, but I am becoming accustomed to it, and can now stand about half of it, letting the other half over the foot-board. / I have been greatly pleased and surprised at the cleanliness of all within their houses, which is greatly in contrast with the outside surroundings, which, as a rule, are the very core of filth and dirt, and they seem to pay more attention to the care of a manure-pile or hog-pen than they do to the outward appearance of their habitations, but the moment you enter their houses all is changed, and even when you find the stable, hog-pens and manure-piles in close proximity to the kitchen and bedrooms, you will find all as neat and clean as it is possible to make them. I have never slept upon better and cleaner beds than these, where the outside surroundings were such as to create nausea, and the same may be said of the culinary departments. All is neat, and is placed upon the table with the greatest care. / But I must come to a conclusion, as it is dinner time, and I have written more than usual length. * * * All join in kind love. * * * / Very affectionately ours, / THOMAS DICKSON. ----

Regent's Hotel, / Leamington, Aug. 8, 1882. / My Dear Sister: Since I wrote you from Disentis, we have your two favors of the 17th and 28th July, both dated at Sharon. We were glad to hear that you were so comfortably located, and trust that the baths have proved to be beneficial, and that you may return home, if not entirely cured, at least greatly relieved. / When I last wrote you we were in Switzerland, and on our way to Lake Lucerne, which we reached by crossing the Great Ober-Alp to Andermatt, and then down the St. Gothard Pass to the head of the lake. While at Lucerne, we ascended the Riga, but as the day was unfavorable, it was not a success. All we can say is that we were up among the clouds, where we obtained occasional glimpses of the

world beneath. We saw, indeed, some wonderful chasms, deep ravines, and boisterous mountain streams, but nothing to what we would have seen had the day been clear. From Lucerne we came direct to Paris, where we spent a week, seeing the sights and listening to the wonderful flow of language which the French people possess. Of course, it did not add much to our knowledge. With Mary and Lara, shopping was the order of the day, and they were kept very busy with milliners, mantua-makers, band boxes, bundles, *bills, &c.* From Paris we came to London, where we spent a night and part of a day, and then came here Saturday afternoon. To say that I am delighted to get back to England does not express the joy I feel. It is like returning home, after a protracted absence in foreign lands, for in addition to the fact that we can talk and be talked to, there is a freshness and beauty in the scenery of England that is unsurpassed, and the houses, with their windows decked with flowers and their neat little surroundings in the way of grass-plots and gardens, give an air of comfort that is seldom found elsewhere. Leamington is situated on the River Leam, is a clean, quiet, little town, and is popular with tourists generally, particularly Americans, who all make it a visit. Kenilworth Castle is within two miles, Warwick five and Stratford-upon-Avon ten miles. Of course, we have visited each, and independent of their historical interest, they well repay the trouble. We went to Stratford yesterday, the road running through one of the most charming landscapes the sun ever shone upon, and as it is harvest time, the farmers are all busy securing the golden grain or packing away their hay and other crops for future use. This, with the green pasture-fields, dotted with fine cattle and sheep, an occasional herd of deer in the park attached to some lordly mansion, and the beautiful streams that are glistening and glancing in the sunbeams, wending their way through lonely meadows, losing themselves occasionally under the shade of the huge oaks of the many plantations, and as the day was fine and the atmosphere hazy and balmy, you can conceive what our enjoyment must have been. Of course we saw all the curiosities of Warwick Castle, and were shown by the bright little girl in attendance, portraits by Van Dyck of, as she termed it, 'Enry the Heighth,' and Anne Boleyn, his Queen. But I have reached the end of my sheet, and must say good-bye. All join me in love. Very affectionately yours, / Thomas Dickson." *(Carbondale Advance*, August 26, 1882, p. 3)

A third letter from Thomas Dickson to his sister is headed "**CALEDONIAN HOTEL, INVERNESS, SCOTLAND, August 27, 1882.** This letter was published in the *Carbondale Advance* of September 16, 1882, p. 3:

"LETTER FROM SCOTLAND. / CALEDONIAN HOTEL, INVERNESS, SCOTLAND, August 27, 1882. .MY DEAR SISTER:--I wrote you last from Leamington, and Belle from Melrose, since which we have spent some days at Edinburg, a night each at Stirling and Oban, and came on here yesterday via Caledonian Canal; and I may here acknowledge the receipt of our kind letters of the 2d and 11th inst., from which I note that you and Belle are enjoying the beauties of old ocean at Ocean Grove, and I need not say that I trust that you will each receive

great benefit therefrom. / I need hardly tell you how much we all enjoy Scotland; for, while I have a particular interest in it, the others seem to get quite as much comfort out of its bare, bald mountains, pure streams, heather-clad hills, deep glens, sylvan glades and romantic valleys, as I do. And while I am on the subject, I wish you could have stood with me upon the walls of Stirling Castle, and taken the glorious panorama as I did. The day was a fine one, but few scattering clouds here and there occasionally passing over the sun, and casting shadows upon the mountains in the distance, and the variegated plain that was spread like a rich carpet at our feet. As we face to the North we have at our Eastern left the Ochill Hills, and beyond them the range of the Grampians. First on the left we have the lofty Ben Lomond, and to the right of that the high peak of Benronne; in front of us in the background is a high mountain range, and nestling near its base the ancient town and abbey of Dun-Blarne, and the beautiful modern town of Bridge of Allan, and still farther to the left and eastward is the high peak of Ben-Cleugh, its summit bathed in the golden hues of the declining sun, and the valley on the bank of the Forth, the majestic river of Karbres Kenneth Abbey. And as we turn Southward we look down the valley of the Forth with Arthur's Seat as a background, while round the base of the hill, and from the left near the Ochill Hills to the extreme right is the river Forth itself, winding and twisting like the links of a chain, and flashing and glistening in the sunlight like bands of polished silver. / 'The whole might seem / The scenery of a fairy dream.' / Of course we rode over the battle-fields of Stirling Bridge and Bannockburn—the one fought by Wallace and the other by Bruce—the one laying the foundation and the other securing the freedom and independence of Scotland. We had for our coachman a canny Scot from whom I gathered a good deal of information, and who, when he found I claimed to be of the manor born, was disposed to crack with me quite freely, and as I led him to talk of his early life he was very amusing, and put me in mind of some of the stories my mother used to tell. Among other things he told me that when he was a herd laddie and got nothing but pamith and treacle drink to his breakfast, that he would occasionally ask the 'guid wife' for a piece of barley bannock, and when I asked him if she put butter on it, he said, 'Aye, sometimes she would spread a wee bit on wi'her thoom, and he wound up by saying that prim folk were far better off now, as they had plenty to eat, and that they 'a'kenned now how butcher meat tasted, which was mair than could be said when he was a bairn.' / We crossed from Stirling to Oban by rail through a country of mountains, glens, locks and streams, where are / 'Crags, knolls and mounds, confusedly hurled, / The fragments of an earlier world.' / A land whose mountain peaks rear themselves above the morning mist, or are bathed in the golden ether of noon; where the upland locks spread their translucent waters to the sun; and where the deep glens and sylvan glades give shelter to as hardy a race of mountaineers as this rude world can produce. / Oban is situated on the shore of a land-locked bay, and is surrounded by beautiful mountain scenery, and is now the resort every summer of large numbers of pleasure seekers. The sail through the Caledonia Canal is made enjoyable from the constant change from Canal to Lock, and from Lock to Canal, while the scenery is wild, and is so diversified that we are kept in a continued excitement. / Inverness, where we now are, is a substantial, well built town and is the commercial centre of a considerable rural population. It is situated on the river Ness near the

entrance into the Murray Firth, and as there are several points of interest in the neighborhood, we shall remain here a few days with the view of seeing them. Among the most prominent is Cullodon Moor, where Prince Charles Edward fought his last battle and which proved to be the death blow to the royal house of Stuart. / But I have spun a longer yarn than usual, and the space I have allotted to letters has been more than consumed. / We purpose going from here to Aberdeen where we will spend a few days visiting points of interest in the neighborhood, then we will go to Dundee where we expect to meet some of the friends we traveled with in Palestine ten years ago. / All join me in love to Andrew, and in kind regards to all our good friends at Carbondale, and believe me / Affectionately yours, THOS. DICKSON." *(Carbondale Advance*, September 16, 1882, p. 3)

A fourth letter from Thomas Dickson to his sister is headed "**ST. ENOCH'S HOTEL, GLASGOW, Sept. 24, 1882."** This letter was published in the *Carbondale Advance* of October 14, 1882, p. 3)

"LETTER FROM SCOTLAND., / ST. ENOCH'S HOTEL, GLASGOW, Sept. 24, 1882./ *My Dear Sister*—I wrote you last from Inverness, since which I have yours of 24th August and 9th September. As a matter of course, I had no idea at the time of writing that my letters would be published, or I would have taken more pains with them. Any one reading them will see at a glance that they were not intended for publication; however, as Dr. Logan saw fit to publish one addressed to him, of the same character, I can hardly take exception to your action, and as I am sure my friends will criticize them lightly, they will probably do no harm. / I wrote Belle from Edinburgh, a few days ago. The incidents, however, were, I believe, confined to our last visit to Lander, so that there will scarcely be any repetition if I again give you a rapid sketch of our movements since leaving Inverness. We left that city on the 31st August for Aberdeen, passing through the mountainous region of Nairn, Elgin, Danff and Aberdeenshire. The general *contour* of the country of the country being the same as that I have described in our passage from Stirling to Oban. Aberdeen is situated at the confluence of the Dee and the Don, and is one of the best built cities in Scotland, besides being full of historical incidents. We spent four or five days there visiting its many points of interest, when we left for Dundee, passing through the beautiful and picturesque shires of Kincardine and Forfare. At Dundee we met our old friends and traveling companions, the Smiths and Martins, who were with us in Palestine ten years ago. We were received and treated by them right royally, and the few days that we spent with them were among the pleasantest we have had since we left home. From Dundee we passed over into Fifeshire, coming through Tayport, Capar and the long town of Kircaldie to Bumtisland, where we crossed over to Edinburgh. After spending a few days we returned to Lander, where we spent last Sunday, coming back to Edinburgh by carriage over the Soutrie Hills, and by way of Dalkieth, and, after remaining a day or two in that city, we came here on Wednesday last. Having given you a connected sketch of our movements since my last writing, there is left for me to note a few

of the things that we have seen and some of the incidents of our travels. While we were at Aberdeen, James and I went up the beautiful Deeside to Ballater by rail, and thence by carriage to Balmoral. The Queen had just arrived the day before, and of course we did not seek to enter. However, we were greatly pleased with the surroundings and with the quiet pastoral beauty of the locality. The weather, until the last few days, has been unexceptional, and all that could be desired; and, as it is the harvest season when every one is busy securing the abundant crops, you will have some conception of the beauty of the country through which we have passed; as, during the whole of the present month we have been surrounded with fields of golden grain, portions of it standing and ready for the sickle, others being cut and made ready for the binders, others again being placed in shocks for curing preparatory to being stacked and housed, and others again leading in huge loads to the stock yards, the whole presenting a scene of rural animation which is rarely seen in any other part of the world. Again the mild September sun of this climate, struggling through the gray and smoky atmosphere, lends a charm to the whole which must be seen and felt to be appreciated. / I must now tell you something of our experiences in and about Edinburgh, the queen city of the world, not only on account of the remarkable beauty of its location but for its many and stirring romantic traditions and historic incidents that connect its present with the past. The city, as you are aware, is situated on a series of hills, separated by a deep glen or ravine, running North-east and South-west, the old town being on the South side and the new on the North, the prominent features being Calton Hill on the North, Arthur's Seat and the Castle on the South, not to mention the many steeples and monuments that tower up towards the sky, which are distributed over the entire city, giving a picturesque appearance to the whole. We were very fortunate in meeting our esteemed friend, Mr. Andrew Patterson, who you may remember being with me at Carbondale some years ago on our way for a trip over the Gravity. As Mr. Patterson is a resident of Edinburgh and familiar with every nook and corner, and as he courteously placed himself at our disposal it gave us an opportunity of seeing the city intelligently. It would take altogether too much time and space to describe what we saw. I must only glance at it superficially. Our first ride was through the modern portion of the city which contains many beautiful squares and public buildings, as well as long rows of palatial residences, the main features being the botanical gardens, St. Andrew's Sq., Charlotte Sq., Dean Bridge and Dean Cemetery. The bridge spans the waters of the Leith and is 106 feet high. From the foot-way at its North parapet a superb view down the ravine and over into Fifeshire is obtained. / The Cemetery is one of the most beautiful spots that it has been my province to see, and contains the mortal remains of many of Scotland's worthies. We took several rides in this part of the city, passing down by Leith and Granton, returning by Leith road to the South end, all of which I need hardly say were of the deepest interest. Our visits, however, to the old town of Edinburg were to me the most deeply interesting, as events of the dead past have always appealed to my feelings more strongly than those of the present. I should have said that the old and new towns are connected by a series of magnificent bridges which adds largely to the architectural beauty of the city. Crossing by the North bridge we reach the historic High street of Edinburgh. At one end is the Castle crowning the high rock which stands so

prominently in the center of the city, the other end resting near the entrance to Holyroad. Here is the old Tran Church, the Church of St. Giles, which became notable in the early protestant times for the thundering anathemas at papal power of John Knox; where the hurling of the stool by Jennie Giddes at the head of the Dean for the swearing of the Solemn League in Covenant; and as being the place of imprisonment of Covenanters. Near here is Grayfriars Church, which is also an historic pile, for it was the scene in 1638 of the signing of the National Covenant, and has had amongst its ministers Principles, Carstairs and Robertson, and Doctors John Erskine, John Inglis and Robert Lee, and contains the ashes of most of the Covenant Martyrs who were executed in the Grass Market. But I must not dwell, but will haste to a conclusion, and only say that we are treading upon historic ground, every foot of which is rich with memories of the past and has furnished themes for an interesting history as well as for many an exciting romance. / We of course visited the Parliament Square, the Lawn and Grass Markets, took a look at John Knox's house, the reputed cottage of David Deems, Jennie's tryst, the village of St. Leonards, the Queen's drive around Arthur's Seat, Craig Miller Castle, which was the place of Queen Mary's imprisonment during the trouble with her rebellious Lords, and which is now a well-kept ruin, the lands and steading of Dumbiedykes, made famous by Scott in his 'Heart of Mid Lothian,' also the many schools, colleges and institutions of learning and industry for which the city is justly fames. / Here, perhaps, is as good a place as I will find to bring this somewhat rambling epistle to a close, for I feel that it would be a sacrilege to mix the classical and interesting city of Edinburgh with the dirt, gloom and smoke of this modern industrial city of Glasgow. / All join me in kind love to all inquirers. As you will note, this letter is written by James, at my dictation, for the reason that I cannot write with the ease that I formally [perhaps 'formerly'] could, as well as in the belief that it will give you less trouble to spell it out. / Very affectionately yours, / THOS. DICKSON, / Mrs. Andrew Watt, Carbondale, Pa." *(Carbondale Advance,* October 14, 1882, p. 3)

In early November, 1882, Thomas Dickson and family returned home from their second trip abroad. Friends from Carbondale, we learn from the following notice, were enthusiastically awaiting his return and hoping that he would favor the city of Carbondale with a public talk here on "the incidents of his journey, and his later impressions on the situation in the countries through which he has travelled":

"RETURN OF THOMAS DICKSON. / Thomas Dickson, Esq., and family will arrive at New York from their European trip on Sunday next, Providence permitting. We learn that late advices from them represent that the journey has been a delightful one, and has done much to recuperate Mr. Dickson's health. The only drawback to their complete happiness has been the reception of the news of the decease of some dear friends on this side of the Atlantic. Mr. Dickson will receive a cordial welcome home from his numerous friends and relatives, but nowhere, and from

no community, will his welcome be more demonstrative and sincere than here where he spent his early years. Already a movement has been started to secure from him a public talk in this city on the incidents of his journey, and his later impressions on the situation in the countries through which he has travelled. It is hoped that Mr. Dickson may accept the invitation, and that our people may be the first to be favored with a recital from his own lips of what he observed on his recent foreign tour." *(Carbondale Leader,* November 3, 1882, p. 2)

Leading members of the Presbyterian church of Carbondale and prominent citizens of the town quickly presented an earnest invitation to Thomas Dickson for a lecture here at his convenience. Thomas Dickson replied that for business reasons he could not do so for some time but if possible he would do so in the future.

"Probable Lecture in the Future. / Upon the recent return of President Dickson and party from Europe, leading members of the Presbyterian church, and prominent citizens of our town, presented an earnest invitation for a lecture at his convenience. Mr. Dickson replied that the "press of business would for some time prevent his doing anything in the line of lecturing; but that, should he at anytime in the future decide to enter upon a public description of his recent travels, his friends at Carbondale will have the first opportunity of listening to him." *(Carbondale Advance*, November 18, 1882, p. 3)

Thomas Dickson, in rapidly declining health, divided his time now between Scranton / Carbondale and his summer residence in Morristown, New Jersey.

In June 1884, Thomas Dickson and his wife spent several weeks at Crystal Lake as guests of Mrs. Andrew Watt, Thomas Dickson's sister.

"President Thomas Dickson and wife arrived in town yesterday and are the guests [of] Mrs. Andrew Watt. Mr. and Mrs. Dickson will spend several weeks at Crystal Lake." *(Carbondale Leader*, June 20, 1884, p.2)

His last public appearance was at the marriage of his sister's daughter, Mary Fordham, of Scranton.

His final days are described by *Logan* (pp. 106-107) as follows:

"He still walked erect and greeted his friends with his life-long heartiness. But he seemed ever conscious of the rapidly approaching dissolution. At his last appearance in his Scranton office he made his old friend and pastor sit down with him at his desk, and for an hour held heart-

communion with him on the solemn side of the drama of life, with its mysterious close in death, and its reveled eternity. In it all he spoke with the same calmness which characterized his business activity. With simple trust in the Savior of sinners, he said he proposed to walk on until he should fall, trusting that, when he did, the good and merciful God would take him to the home of eternal rest and full satisfaction. / He returned from his farewell visit to the scenes of his youth, and the responsibility of the riper years, to his home at Morristown; and after remaining a few days passed up the Hudson, still able to do light duties, and hopeful of continued strength. While on this visit at the Catskill House he was taken suddenly worse, and his attach was aggravated by the fact that he was out of reach of his physician. With much difficulty he was taken back to his home at Morristown. Shrinking from the idea of helplessness, he doubtless by his very physical exertions aggravated his attack, and hurried on the exhaustion which was so rapidly pushing him out of the world. Leaning on the arm of his old friend, Coe F. Young, he even protested that he was giving assistance, rather than receiving it; and found breath in the very limits of his life to cheer this life-long friend and brother. Poor Young had to laugh through his tears, while Dickson persisted in twitting him with his clumsy helplessness and dependence upon the friend he had leaned on so long. His cheerfulness and his mental vivacity were the last signals he left flying in the view of his life-long friends who gathered about him. His Morristown pastor, Dr. Erdmon, sat down by his bedside and found the solid comfort of a soul implicitly resting in hope; and discovered the real heart-strength of the Christian, which gave blessed token of a coming glory. / Without a complaint, or disturbed confidence for a moment, Thomas Dickson sunk away with the declining sun of the afternoon of the 31st of July, 1884, when as the evening shadows began to lengthen, he passed through the twilight to the morning. Suddenly the 'wheel was broken at the cistern,' and this noble brother, husband, father, friend—this man of successful business, whose life was so precious to so many other lives—simply 'fell on sleep' and 'was not, for God took him.' He had gathered his garments about him and lain down, with Christian dignity, to his rest."

At the special meeting of the Board of trustees of The Mutual Life Insurance Company of New York on August 1, 1884, Mr. Olyphant, a Trustee of that company, reported that Thomas Dickson's last words, uttered just before he passed away, were: 'It is all right." *(Logan*, p. 148)

Logan (p.103) provides the following description of the heart disease which ended Thomas Dickson's life:

". . . it was discovered, after his death, and announced by his physicians, that 'his life for the last ten, or fifteen years had been hanging upon a thread.' His activity under such a pressure of disease was more than a marvel. The ossification of the valves of his heart had gone on steadily through the course of years, limiting the flow of blood in his system, until, when death came, an orifice through which a cambric needle could hardly be passed was the last channel left for the vital flow."

Logan's account of the conveyance of the earthly remains of Thomas Dickson from Morristown, NJ, to Scranton, PA, and the funeral and burial of Thomas Dickson is very interesting. We read the following in *Logan*, pp. 116-131:

"On the second day of August, 1884, the remains of Thomas Dickson were placed upon a special train, which had been heavily draped and kindly furnished for the use of the family and friends by Samuel Sloan, the worthy President of the Delaware, Lackawanna and Western Railway. A whole train-load of old friends from the valley, who had spontaneously gathered, accompanied the family with their precious burden, under the leadership of Mr. Dickson's confidential friend, Mr. Coe F. Young, and his sons. Citizens, business and professional men, workmen, and friends in social life, from every walk and condition, pressed forward for the privilege of showing their affection for their departed associate and friend; and all along the way from Morristown to Scranton the deepest symbols of mourning testified of the hold that this man had taken on the heart of the peop0le. The body was received with tearful silence by the citizens of Scranton and taken to the Dickson residence, where it remained in state for two days, in answer to the demand of hundreds of workmen of all classes, who desired to look on the dead face of the man who they had delighted to serve as a friend, while under his employment and official direction. / On the fourth day after his demise the funeral services took place from the family residence on Washington Avenue, conducted with befitting simplicity, according, as nearly as possible, with the well-known tastes, and desires often expressed. Hundreds gathered to the funeral. Not only were the house and grounds filled to their utmost capacity, but the sidewalks and streets for a block or more away were packed with those who desired to pay the last tribute of their respect to this brother beloved. It had been announced at ten o'clock in the morning that those who desired could view the remains and for more than two hours a constant stream of mourners passed through the gates of the Dickson mansion to take a last look at his face. Hundreds of employees of the Delaware and Hudson and of the Dickson Manufacturing Companies were among this crowd; and scores of men who had known him long years ago, before he had achieved his life's work or had made his great place in society. . . / At twelve o'clock he doors were closed and immediate preparations for the funeral were made; and within half an hour the home was filled with the relatives and friends of the family. An especial train arrived from New-York consisting of four heavily-draped coaches, which brought a large party of ladies and gentlemen from New York, and Morristown. Many more had come from Honesdale, Carbondale, Wilkesbarre, and Pittston, on special trains during the morning. So that thousands of people had collected in silence when the time appointed for the religious services had arrived. The casket was placed in the front parlor of the mansion. On its lid were laid palm leaves, the symbols of victory, with a very few floral designs and mememtos [sic] of family affection. The funeral services were under the direction of his old friend and pastor, Rev. S. C. Logan., D. D., of the First Presbyterian Church. . ."

Towards the end of his funeral address, Rev. Logan (p. 129) remarked:

"The world will always be the better for Thomas Dickson's having lived in it."

Following Dr. Logan's address, "the body was then borne away by the associates and co-workers of the dead brother and friend to the house appointed for all the living. / These business associates and friends were: Messrs. A. H. Vandling, J. E. Chittenden, E. W. Weston, C. D. Hamond, T. H. Voorhees, and Rolin Manville, all of whom were connected with the Delaware and Hudson Canal Company. His honorable pall-bearers were Hugh J. Jewett, President of the Erie Railway, F. S. Winston, President of the Mutual Life Insurance Company, J. R. Taylor and W. H. Tillinghast, of the Reading Railroad, Benjamin G. Clark, of the Lackawanna Iron and Coal Co., Samuel Sloan, President of the Delaware, Lackawanna and Western Railroad, Le Grand B. Cannon, of the Delaware and Hudson, G. De B. Keim, of the Philadelphia and Reading, David Dows , of the Delaware and Hudson, and E. P. Wilbur, of the Lehigh Valley Railways. These honored and worthy gentleman walked beside the hearse with silent meditation, as mourners of a fallen brother. / The procession would its way to the Dunmore Cemetery between rows of silent workmen and their families, who stood with uncovered heads, filling both sides of the street for a full mile and a half; and many a silent tear told of the more than mere respect for the dead which had gathered the working-people to witness these funeral solemnities. / The remains were conveyed to their last resting-place while clouds hung low and threatening; and the heavy-hearted multitude returned to the city with silent lips. But as the mourners left the cemetery the mists rolled back., and the sun burst forth from behind the clouds; and a beautiful rainbow arched its prismatic colors above the new-made grave, which seemed but an emblem and an omen of the beautiful memory left by the brilliant achievements, and the unblemished purity, that had marked the life, and illustrated the career, of Thomas Dickson." *(Logan,* pp. 130-31)

The president of the Board of Trustees of the Mutual Life Insurance Company of New York, together with Mr. Holden, Mr. Olyphant, and Mr. Henderson, all of that company's Board of Trustees, attended the funeral of Thomas Dickson. The president reported the following very interesting details about the funeral procession from the Dickson mansion to the Dunmore Cemetery and the placement of the body in the Dickson Mausoleum: "The family residence was filled with Mr. Dickson's personal friends and neighbors, while a much larger number of them, who could not find room, remained at the entrance and in the streets near the house until the services were ended. / The cemetery was two miles distant. As the long funeral procession wound its way through the valleys, over the hills, and past the open shafts leading to the mines beneath them, the busy scenes of our friend's early life and labors, and of his subsequent history,

were spread out before us. On the roadside, at short intervals, stood large crowds of men, women, and children, from the various workshops and mines, with uncovered heads, watching with sad, sympathetic eyes, the remains of their cherished friend passing to their last resting place. No funereal pomp or studied eulogy could so eloquently, and touchingly assure us of the place he filled in the hearts and minds of the people, as the mute sorrow expressed in every countenance; as the multitude watched this procession on its way to bury their friend out of their sight. From the entrance at the cemetery to the open grave, the path, and the ground around it were covered with evergreens and flowers, on which his chosen friends, who had borne his body to its last earthly home, placed the coffin. Then, as they reverently deposited the body in its narrow resting place, they sung with sweet melody these touching words: 'Unveil they bosom, faithful tomb,/ Take this new treasure to thy trust; / And give these sacred relics room / To seek a slumber in the dust. . . ' " *(Logan*, pp. 149-151)

Thomas Dickson's earthly remains are interred in the Dickson Mausoleum in Dunmore Cemetery.

The Dickson Mausoleum in the Dunmore Cemetery, Dunmore, PA. Photo by the author in 2010.

The Dickson Mausoleum in the Dunmore Cemetery, Dunmore, PA. Photo by the author in 2010.

In late November of that year, 1884, Thomas Dickson's widow and Mrs. John R. Fordham of Green Ridge were the guests of Mr. and Mrs. Andrew Watt in Carbondale:

“Mrs. Thos. Dickson, of Morristown, N.J., and Mrs. John R. Fordham, of Green Ridge, were the guests of Mr. and Mrs. A. Watt on Tuesday.” *(Carbondale Advance*, November 22, 1884, p. 3)

6016

Thomas Dickson the Manager of Men

Thomas Dickson, who became one of the most effective, well-loved, and respected presidents of the Delaware and Hudson Canal Company, began working for the D&H as a mule driver in the mine sweep at Carbondale in 1837. In 1860, he was named Superintendent of the D&H Coal Department; in 1864, he was named General Superintendent of the Delaware and Hudson Canal Company; in 1866, he was elected Vice President of the D&H; in 1869, he was elected President of the D&H.

What were the qualities that Thomas Dickson embodied that made possible this remarkable career with the D&H?

From Samuel C. Logan's *The Life of Thomas Dickson* (Scranton, 1888), we have learned a lot about Thomas Dickson and the qualities that he embodied that made him an excellent manager and leader of men.

Even as a boy, Thomas Dickson manifested "a love of justice, honesty, and fair dealing under all circumstances." (*Logan,* p. 21). In addition he abhorred "all dishonest shirking and falsehood. . . He was neither guilty of it himself nor would he ever suffer it in others, if he could help it." *(Logan,* p. 22)

"Throughout life, Mr. Dickson was a student of men and of principles, rather than of books. He treated those with whom he was connected in business or in social life as equals and associates, and he soon learned each one's personal peculiarities. His perceptions were quick and clear, and his judgments apparently without prejudice. The ability to weigh evidence and to balance probabilities on different sides of a business proposition, was unconsciously lost sight of by those who were his associates; and perhaps was lost sight of by himself, in the readiness with which he reached his conclusions, in the clearness with which he announced them, or in the pleasant pertinacity with which he stuck to them after their announcement." (*Logan,* p. 35)

"His native honesty and his high sense of justice, between man and man, no doubt gave him clearness of perception in drawing up legal papers without the use of books or the aid of learned counsel. It was very seldom indeed that his embodiment of a business transaction did not entirely

satisfy the parties involved, as well as stand the test of legal investigation. One of the best lawyers at the bar of Lackawanna County was accustomed to say that Dickson's legal papers were as good as he himself could draw." (*Logan,* p. 36)

"It was when his mind came in contact or in collision with other great minds that he sparkled and showed his really fascinating powers." (*Logan,* p. 38)

"Thomas Dickson was born with a facility for making friends, and equally for holding them, when he had once attached them to himself. His friends, in all his business life, were found among all classes and conditions of men. The intelligent and the humble, the day-laborer and the associate in his office, and the representatives of rival industries, all seemed to be personally attached to him, and took every proper opportunity to show him their confidence and love." (*Logan:* p. 43)

Speaking of the moment when Thomas Dickson conceived the idea of establishing the company that would ultimately become The Dickson Manufacturing Company, *Logan* remarks (p. 48): "He at once brought to this purpose his peculiar talent for utilizing the human forces within his reach. He enlisted his father and his brothers . . ." Having decided that the new company would be located in Scranton, "he [Thomas Dickson] acted promptly as soon as his mind was made up, as was his habit. He purchased for his site a number of acres on what was then known as Pine Brook. . ." *(Logan,* p. 50)

In the period 1859-1867, Thomas Dickson served as both President of the Dickson Manufacturing Company and the Coal Superintendent/General Manager of the Delaware and Hudson Canal Company. Speaking of Thomas Dickson's power and genius as a manager during this period, Logan states:

". . . Mr. Dickson developed and manifested a power and genius in his management that few men ever reach. In these two positions he applied and demonstrated his active endowments, and especially his ability to select, to harmonize and use any number of subordinates with the smallest amount of friction, and so as to secure the best general results. His judgment was so clear, and his conclusions so fortified and distinctly announced, both to his associates, subordinates, and employers, that they seldom needed revision. He was said to be a stubborn man, and probably he was. But he always gained his points with the best of good nature, and his triumphs left those who were discomfited by him without lacerated feelings. Indeed, generally men became his better friends after his differences with him. <u>He once said to me that he attributed the best success of his life to his ability to control men without requiring them to feel it.</u> [emphasis added]." His efficiency in managing the great trusts he had held he traced to the facts that he always treated his subordinates as his friends; always personally received them as his equals, just as far as they would allow him to do so; and that he tried his best to deal justly with men, in every condition of life."(pp. 56-57)

Thomas Dickson's wise management of the coal trade in 1879 is highlighted in the following article from the *Carbondale Leader* of October 25, 1879:

“THE COAL BOOM. /It now looks as if a movement had started in the coal business which will put the trade in an independent and commanding position. The wonderful revival of general business throughout the country is at length forcing an upward tendency in the prices of coal that bids fair to put the trade on a solid and paying basis. It has no doubt been hastened by the persistent efforts of those who favored the combination methods, for although the recent movement in that direction was a seeming failure, it has had its effect in showing the necessity of some concerted effort to advance prices. Everything now seems to be working favorably to forward the plans of the coal Presidents, notably Mr. Dickson, of the D. & H. C. Co., whose unyielding adherence to the combination plan has given strength and vitality to the upward movement. His sagacity and foresight, coupled with his determined and unwavering course of action, has been an important item in preserving the trade from a total wreck and a general suspension of our home industries. It may be some years before his administrative talents will be rightly appreciated; but when the trade has assumed the grand proportions which the ‘signs of the times’ now promise, and our people are again rejoicing in prosperity—when the stock of the ‘old company’ has reached par again, as it probably will,--Mr. Dickson will be reckoned among the ablest of the managers who direct the vast business of the coal trade.” *(Carbondale Leader*, October 25, 1879, p. 2)

Thomas Dickson was a master of managing difficult or uncomfortable situations:

"His [Thomas Dickson] ability to free himself from difficulties and uncomfortable positions, whether in social or business life, was as striking as the sharpness and wisdom of his care to avoid them. He was seldom nonplused by an opponent, and if he were, he did not forget it, but good-naturedly 'bided his time' until the opportunity of balancing accounts came to him." (*Logan*, p. 70)

In the funeral address that Rev. S. C. Logan delivered without notes at the funeral of Thomas Dickson, Rev. Logan said:

"He was endowed with a clear and quick perception, which enabled him to reach his conclusions with a rapidity and clearness that seemed like intuition; and to announce his judgments with a completeness that seldom needed a revision. With a judgment never hasty, but ever controlled by a sense of justice which never seemed to be inactive in his soul; with a will inflexible to the purpose when once the end was clearly apprehended; a good natural persistence—and a wealth of resources seemingly inexhaustible; it is easy that he was born to be a leader of men. Yet, with it all, he had such qualities of heart that he never seemed to fail in his appreciation of men with whom he either came in contact or collision, in any of the various paths and responsibilities of his busy life. His social nature spread over all the ruggedness of his character, a glow of beauty, and filled him with a fountain of joy and fun that made him seem like a blood-brother to all kinds

of men. . . He showed himself both a leader of man and a master of the forces he was appointed to direct ; whether as a workman in the shop, or as chief director in the chair of honor and responsibility. And what was stranger than all this was the fact that he seemed to be the same Thomas Dickson, whom men of all classes and callings were accustomed to calling 'Tom,' in all stations and positions. . . His appreciation of humanity made him a friend of everyman, and obtained for him the confidence of all workers, whether they were with him or under him. Hence the workmen were always his friends, and believed in him with unquestioning confidence." *(Logan,* pp. 122-25)

To illustrate the confidence that the workmen had in Thomas Dickson, Rev. Logan spoke of the resolution of the very difficult "lease question" that came to the foreground during Thomas Dickson's time as president of the D&H.

"Years ago the laborers in the upper part of the v alley had settled upon the lands of the company of which Mr. Dickson was an employee, and were holding this land by irregular titles. This state of things had continued for years. At length difficulties arose, and lawyers on both side were puzzling themselves under the cloud of two or three hundred lawsuits when the laborers took the matter in their own hands and came to the Company with the proposition that if Thomas Dickson would take hold of the matter, with full power to act, they would abide by his decision without appeal or complaint. The proposition was accepted and the settlement was made, and no complaint has been heard from that day to this." *(Logan,* pp. 125-26):

Also in his funeral address, Rev. Logan said:

"He [Thomas Dickson] was a man apparently without moods. He seemed never to change. To us he was always the same. Whether we met him in his office, overwhelmed with the burdens of business; on the highways of life and of leisure; or in the home of his rest and social enjoyments, he was always the same genial soul. There was no watching around office doors to find one's self in season to speak to the President of the Delaware and Hudson Company. He always seemed not only accessible, but actually waiting for the humblest man that had business with him." *(Logan,* pp. 126-27)

In the preamble and resolutions that were adopted at a special meeting of the Board of Managers of the Delaware and Hudson Canal Company, held in the office of the Company on Saturday, August 2, 1884, to take action in regard to the death of their late president, we read the following:

"Being invested with it [the presidency of the D&H], he [Thomas Dickson] he adorned his Presidency by bringing to bear upon its duties the whole weight of a rare condition of mental and moral endowments. With all the cordiality and loyalty of his nature, he carried out the broad policy of development which had marked the administration of his predecessor in the office, and with which he had always been in generous sympathy. To insure the success of his noble work, he was furnished with an intellectual strength, a faculty of rapid and accurate judgment, a power

to grasp and arrange multifarious details, and an intuitive knowledge of men, which, together with his immense power of will, communicated a unity and a momentum to his endeavors that compelled universal respect. . . / Perhaps no exhibition of his great power to influence others was more marked—certainly none was more honorable—than that which was brought out on occasions of controversy with other Companies. In the composition of these his breadth of view in suggestions of policy, his judicial moderation in presenting the claims which he represented, and his manifest anxiety to reconcile the interests of all, upon a foundation of justice to all, led many, who have admired his course, to regard him as a peace-maker among his fellows; and in the limited time since his death more than one of these companies have referred to this trait of his character. But in all the relations of life, private as well as official, he was the same highly-esteemed, respected, honored, and beloved man. . . / F. M. Olyphant, Secretary." *(Logan,* pp. 140-41)

At the meeting of the Board of Trustees of the Mutual Life Insurance Company of New York, held August 1, 1884, the Honorable John E. Develin said of Thomas Dickson:

"Mr. Dickson rose from the ranks by a wonderful mental power—a gift from above. By great industry, industry, integrity, and honesty, he elevated himself to one of the most prominent and influential positions in the country. After he became a member of this Board, his activity, his attention to its affairs, and his conscientious discharge of his duty were marked by all his associates." *(Logan,* p. 143)

Such was Thomas Dickson.

It is easy to understand why he became one of the most effective, well-loved, and respected managers of men in the entire history of the Delaware and Hudson Canal Company.

6017

The D & H Gravity Railroad and Canal: Selected Bibliography

Barber, David G. *A Guide to the Delaware & Hudson Canal,* 2003.

Bartoletti, Susan Campbell. *Growing Up in Coal Country.* (Boston: Houghton Mifflin Company, 1996)

Best, G. M. "The Gravity Railroad of the Delaware & Hudson Canal Company," *Railway & Locomotive Historical Society Bulletin* No. 82, April 1951, pp. 7-24.

_____. *Locomotives of Dickson Manufacturing Co.* San Marino, CA, 1966.

Brands, H. W. *Andrew Jackson His Life and Times.* Doubleday, 2005.

Casey, Jr., Edward J. and Dorothy D. Jones. *A History of the Borough of Archbald Pennsylvania,* 1976.

Carbondale newspapers in the archives of the Carbondale Historical Society, 1828-1902.

Clark, J. A., *The Wyoming Valley, Upper Waters of the Susquehanna, and the Lackawanna Coal-Region, including Views of the Natural Scenery of Northern Pennsylvania, from the Indian Occupancy to the Year 1875.* (Scranton: J. A. Clark, publisher, 1875).

*Coal Miners' Pocketbook. Principles, Rules, Formulas and Tables. (*McGraw-Hill Book Company, Inc., New York, 1916. Eleventh Edition, Third Impression)

Connolly, Mary Theresa. "T. C." *The Gravity History of The Pennsylvania Coal Company Railroad 1850-1885,* 1972.

Delaware and Hudson Canal Company. (1) *Record of Deeds. New York to D. &. H. C. Co., Providence, PA (2) Record of Deeds. Pennsylvania (Wayne, Pike and Susquehanna Counties) to D. & H. C. Co and others, Providence, PA (3) Record of Deeds. Pennsylvania. Luzerne County to D. & H. C. Co. and others, Providence, PA.* These three deed volumes are in the archives of the Carbondale D&H Transportation Museum, Carbondale, PA.

Delaware and Hudson Company. *A Century of Progress / History of The Delaware and Hudson Company / 1823-1923.* (Albany: J. B. Lyon Company, Printers, 1925)

_____. *Corporate History of the Delaware sand Hudson Company and Subsidiary Companies,* Volume I, *The Delaware and Hudson Company. 1906.* Transportation Library, University of Michigan, 1906. Contains complete copies of all of the Pennsylvania and New York statutes that relate to the Delaware and Hudson Canal Company and the Delaware and Hudson Company for the period 1823-1906.

_____. *D&H Bulletin* (Volume I, l, April 1, 1921—Volume XVIII, 6, June 1, 1938.

_____. *Motive Power on the D&H.* 1926.

_____. *Motive Power, Passenger, Freight and Work Equipment.* 1936.

_____. P*assenger and Freight Stations Delaware & Hudson. The Delaware and Hudson Company / Board Of Managers / Inspection of Lines : : . June 7th to June 10th, 1928.*

_____. *Passenger, Freight and Work Equipment.* 1927

Dixon, Stuart. *The Honesdale Branch of the Delaware & Hudson Railroad Rails Through Canaan,* U. S. Department of Justice, Federal Bureau of Prisons, 2004.

Downing, Andrew Jackson. *The Architecture of Country Houses: Including Designs for Cottages, and Farm-Houses and Villas, With Remarks on Interiors, Furniture, and the best Modes of Warming and Ventilating,* D. Appleton & Company, 1850

_____*Cottage Residences: or, A Series of Designs for Rural Cottages and Adapted to North America,* 1842

_____ *A Treatise on the Theory and Practice of Landscape Gardening, Adapted to North America,* 1841.

Durfee, J. R. *Reminiscences of Carbondale, Dundaff and Providence, Forty Years Past.* Philadelphia. 1875.

FitzSimons, Neal. *The Reminiscences of John B. Jervis,* Syracuse University, 1971

Folsom, Jr., Burton W. *Urban Capitalists Entrepreneurs and City Growth in Pennsylvania's Lackawanna and Lehigh Regions, 1800-1920.*The Johns Hopkins University Press, 1981.

Hartmann, Edward George, *Americans from Wales* (New York, 1883).

Henretta, James A. *The Evolution of American Society, 1700-1815. An Interdisciplinary Analysis.* (D. C. Heath and Company, Lexington, MA, 1973)

History of Luzerne Lackawanna and Wyoming Counties, PA. with Illustrations and Biographical Sketches of Some of Their Prominent Man and Pioneers. (New York: Munsell & Co., l880).

Hitchcock, Frederick L., and John P. Downs. *History of Scranton and the Boroughs of Lackawanna County,* Volume II, 1914.

Hollister, H., M.D., *History of the Lackawanna Valley.* With Illustrations. First Edition. Providence, PA, 1857.

_____. History *of the Delaware and Hudson Canal Company.* 1880. Unpublished typescript in the collection of the D. & H. Canal Historical Society and Museum, High Falls, NY.

Hudson Coal Company. *The Story of Anthracite.* New York, 1932.

Hudson, John W. II, and Suzanne C. Hudson. *Scenes Along the Rails. Volume I: The Anthracite Region of Pennsylvania. Part I.* (Depot Square Publishing, Loveland, OH, 1996)

Le Roy, Edwin. *The Delaware and Hudson Canal: A History.* (Honesdale, PA: Wayne County Historical Society, 1950, 1980).

_____. *The Delaware & Hudson Canal and its Gravity Railroads*. (Honesdale, PA: Wayne County Historical Society, 6th printing, 1980).

Leslie, Vernon. Hones: *The Early Years. Honesdale,* 1981.

_____. *Honesdale and the Stourbridge Lion.* Honesdale, 1979.

Logan, Samuel C., *The Life of Thomas Dickson.* Scranton, 1888.

Lowenthal, Larry. *From the Coalfields to the Hudson: A History of the Delaware and Hudson Canal*. (Fleischmanns, New York: Purple Mountain Press, 1997).

Mathews, Alfred. *History of Wayne, Pike and Monroe Counties, Pennsylvania,* 1886

Miller, Donald L. and Richard E. Sharpless. *The Kingdom of Coal / Work, Enterprise, and Ethnic Communities in the Mine Fields.* (Philadelphia, PA; University of Pennsylvania Press, 1985).

Nye, Russel Blaine. *Society and Culture in America 1830-1860.*

Osterberg, Matthew M. *The Delaware & Hudson Canal and The Gravity Railroad.* Images of America, 2002.

Percival, Gwendoline E., and Chester J. Kulesa. *Illustrating an Anthracite Era: The Photographic Legacy of John Horgan Jr.* Pennsylvania Historical and Museum Commission and Anthracite Heritage Museum and Iron Furnaces Associates, 1995.

Portrait and Biographical Record of Lackawanna County, Pennsylvania, 1897 (PABRLCP)

Proceedings of the Canal History and Technology Symposium. Volume I, January 30, 1982. Published by the Center for Canal History and Technology, Easton, PA, 1982. ("Ellet and Roebling" by Donald Sayenga, pp. 114-154; "The Pennsylvania Coal Company's Gravity Railroad" by Dr. Edward Steers, pp. 155-221)

_____ Volume II, March 26, 1983. 982. Published by the Center for Canal History and Technology, Easton, PA, 1983. ("The Delaware and Hudson Canal Company's Gravity Railroad" by Dr. Edward Steers, pp. 129-203)

_____Volume III, 1984. Published by the Center for Canal History and Technology, Easton, PA, 1984. ("A Historical Survey of the Erie and Wyoming Valley Railroad")

_____ Volume XI, 1992. Published by the Center for Canal History and Technology, Easton, PA, 1992. ("Delaware & Hudson Company vs. Pennsylvania Coal Company during the 1850s" by Spiro G. Patton)

Rashleigh, Alice V. *Carbondale, My Carbondale. A History of the Pioneer City*, 1951

Roberts, Ellis W. *The Breaker Whistle Blows. Mining Disasters and Labor Relations in the Anthracite Region.* (Anthracite Museum Press, Scranton, PA 1984).

Ruth, Philip. *Of Pulleys and Ropes and Gear, The Gravity Railroads of The Delaware and Hudson Canal Company and The Pennsylvania Coal Company* (Wayne County Historical Society, Honesdale, 1997).

Sanderson, Dorothy Hurlbut. *The Delaware & Hudson Canalway / Carrying Coals To Rondout,* 1965

Sayenga, Donald. *The Birth and Evolution of the American Wire Rope Industry,* 1980

_____*Ellet and Roebling,* 1983

Shaughnessy, Jim. *Delaware & Hudson / The History of an Important Railroad Whose Antecedent Was a Canal Network to Transport Coal. (*Berkeley, CA: Howell-North Books, 1982).

Supreme Court, Ulster County. The President, Managers and Company of the Delaware and Hudson Canal Company vs. The Pennsylvania Coal Company: Pleadings and Testimony taken before J. H. Dubois, Referee. New York, 1858.

Upper Lackawanna Watershed Conservation Management Plan, Final Report, January, 2002.

Wakefield, Manville B. *Coal Boats to Tidewater The Story of the Delaware and Hudson Canal (*South Fallsburg, NY: Steingart Associates, 1965).

Wayne County Historical Society Newsletter, July-August-September 2012 issue.

Whiting, Charles W. "An American Gravity Railroad," *Cassier's Magazine*, Volume 8. No. 2, 1895.

MAPS

Atlas of the City of Scranton and Borough of Dunmore, published by L. J. Richards & Co., Philadelphia, PA 1888; also 1899 edition; also1918 edition by Volk & Kuhls.

Baist, G. W. *Atlas of Wyoming and Lackawanna Valleys Luzerne and Lackawanna Counties, Pennsylvania*, Philadelphia, 1894.

Beers, D. G. *Atlas of Luzerne County, Pennsylvania. From actual Surveys by and under the direction of D. G. Beers. (*Published by A. Pomeroy & Co., Philadelphia, 1873).

Carbondale Including Simpson and Whites Crossing, Lackawanna County, Pennsylvania. (Sanborn Map Co., New York, April 1930).

City Atlas of Scranton, Pennsylvania. (G. M. Hopkins, C. E., Philadelphia, 1877).

City of Scranton and Borough of Dunmore, Pennsylvania, 1898.

Delaware and Hudson Canal Company. *Gravity Railroad / Carbondale to Honesdale,* 1895. Maps drawn by W. E. Anderson. Carbondale D. & H. Transportation Museum, Carbondale, PA.

_____Map volume: *Delaware & Hudson Company's Railroad, Honesdale Branch, Carbondale to Honesdale.* March 1901. Maps drawn by W. E. Anderson.

Sanborn Map Company's Insurance Map of Scranton, Pennsylvania. April 1884 edition; also Volume III, 1956.

Tappan, George William . *Map of the City of Carbondale, Lackawanna County, Pennsylvania. From Actual Surveys By and Under the Direction of George William Tappan.* (Scranton, PA, October 18, 1909)